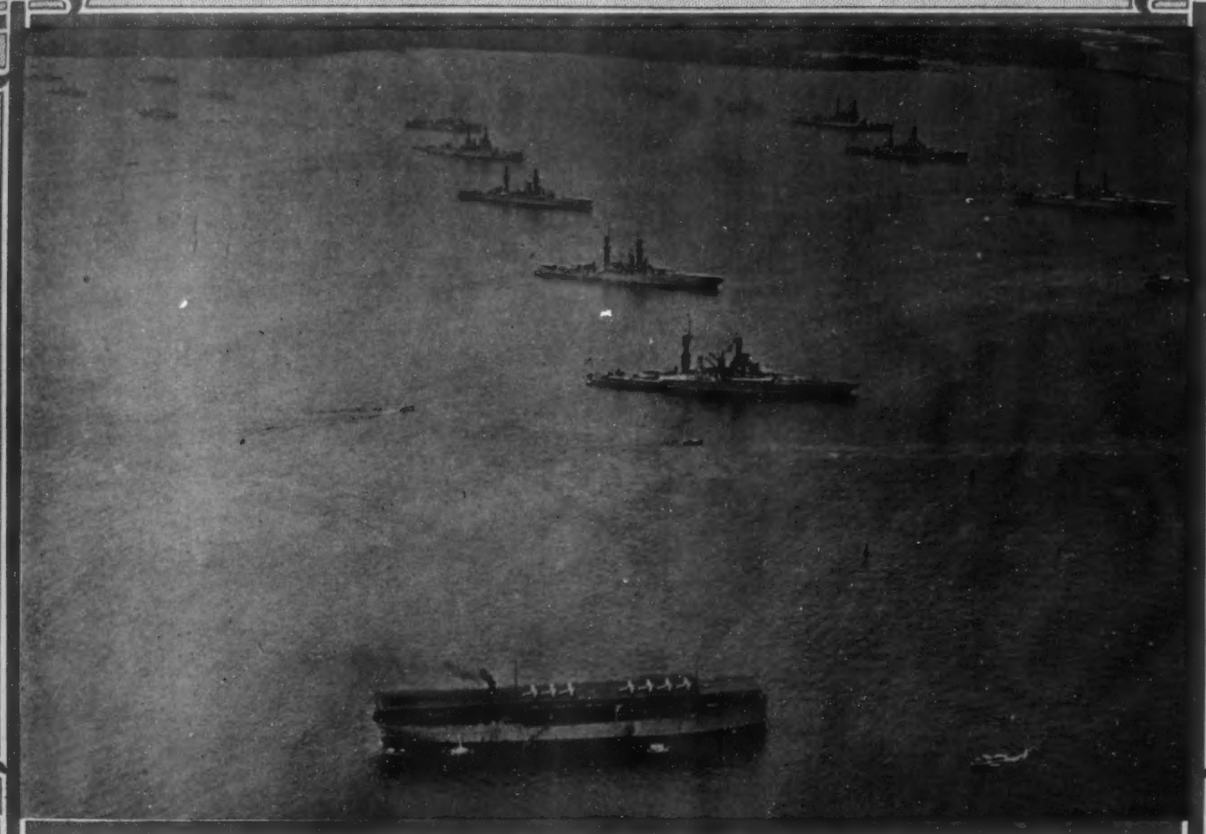
AVIATION

The Oldest American Aeronautical Magazine

MARCH 3, 1924 Issued Weekly PRICE 10 CENTS



The aircraft carrier Langley with the Fleet during the maneuvers in the Caribbean

VOLUME XVI

NUMBER 9

SPECIAL FEATURES

BALTIMORE GETS SCHNEIDER RACE

RELATION OF AIR POWER TO SEA POWER

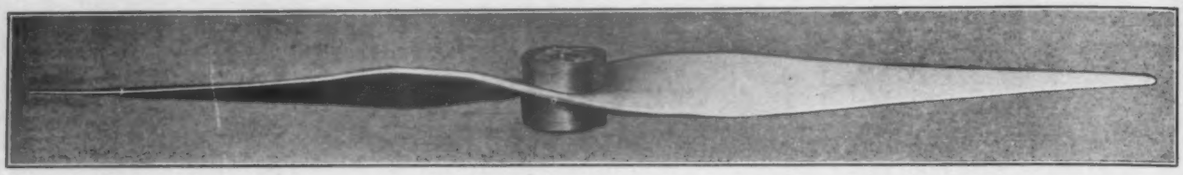
THE CURTISS EXHIBITION COMPANY IN 1923

PROGRAM OF THE DAYTON INTERNATIONAL AIR MEET

THE GARDNER, MOFFAT CO., INC.
HIGHLAND, N. Y.
225 FOURTH AVENUE, NEW YORK

Entered as Second-Class Matter, Nov. 22, 1920, at the Post Office at Highland, N. Y. under Act of March 3, 1879.

CURTISS-REED ONE-PIECE DURALUMIN PROPELLER



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MARCH 3, 1924

AVIATION

VOL. XVI. NO. 9

Published every Monday

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AVIATION

The only American Aircraft Weekly
The oldest American Aircraft Magazine

WILL SERVE YOU BEST because it

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—covers the news first and most thoroughly.

—prints first and often exclusive descriptions of new aircraft.

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Trade Mark

"For Human Locomotion"

In "The Outline of History," H. G. Wells writes that "by 1909 the aeroplane was available for human locomotion." It is an interesting coincidence that since 1909 exactly, The Glenn L. Martin Company has been building quality aircraft.

Without discounting the vital importance of airplanes in military and strictly governmental use, it seems certain that man's most useful exploitation of the air is destined to be as a medium for his own transportation in commerce and industry.

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Vol. XVI MARCH 3, 1924 No. 9

The Site for the Engineering Division

MORE and more is the question of the location of a new McCook Field being discussed. That it is settled that it should be at Dayton is not, as far as we can learn, a unanimous view even in the Air Service.

As has been pointed out, the raising of $400,000 by the citizens of Dayton for a site where the Chief of Air Service has stated $5,000,000 would be spent for an adequate engineering station, and drawing an annual government payroll of $2,000,000, could probably be duplicated in several cities were the proposition made to them. Nevertheless, Dayton does occupy a strategic position as a labor market. As twelve thousand of its citizens were engaged in aircraft construction during the war, and the city is the home of many manufacturing plants requiring highly skilled mechanics, it affords McCook Field a choice of labor that is most favorable.

The real problem of the location of Dayton is the time lost by the Air Service in securing information necessary for its contractual negotiations, and by the constructors who spend such a large part of their time on trains between their factories, Washington and Dayton. This is neither efficient nor economical. And the fact that the site of McCook Field was selected to meet special war conditions should not be controlling if it is found by experience that another site would meet present conditions more satisfactorily.

That a site located nearer to Washington would have great advantages is generally conceded. When the moving of McCook Field was considered a few years ago, Eastern locations were visited with the object of investigating more desirable sites than Dayton could offer. Several sites now owned by the government were considered. The advantageous location of Aberdeen Proving Ground and its proximity to Washington is an example of a well located experimental station.

Before a final decision is reached by Congress on this proposal, and particularly before the October celebration in Dayton, it would be in order to investigate whether or not other cities, located nearer Washington, might not, when informed of the advantages, make offers that would be equal or superior to the Dayton plan.

Rickenbacker Hits Subsidies

WHENEVER our Ace of Aces expresses an opinion on aviation, it deserves the consideration due him as one of the most noted fliers in the world.

His views about subsidies, which will be found in this issue, are theoretically correct to a large extent and undoubtedly the future will confirm his position. But his contention appears to be somewhat colored by the present prosperous condition of the automobile business.

Taking up his first point, that the most useful implements of war were not originally designed for the purpose, we are bound to feel that if we had not had especially designed artillery for the movement of guns and had been forced to rely on commercial vehicles we would not have gone far in the war of 1914-18. In a similar way, had we had to rely on commercial ships for fighting at sea, the results would have been critical. For the same reasons we do not believe that aircraft built for commercial uses, where efficiency, safety and economy are the main requirements, can be used with success against an enemy equipped with aircraft designed for military and naval uses, where maximum performance regardless of cost is the watchword.

When Captain Rickenbacker advocates the withdrawal of all government support from the aircraft industry and tends to give the impression that prosperous aircraft constructors "nearest the trough glut themselves while those in the background starve," he indicates a very inadequate knowledge of the present amount of so-called government support, besides creating an unfair impression that a few of the aircraft manufacturers are gorged with government orders. The briefest investigation will show that not one of our constructors has any orders that can keep him busy to full capacity or make him look ahead six months and know that his factory will be at work on any orders.

Our position regarding subsidies has always been that air transport routes should receive the same government encouragement that railroads, merchant shipping and automobiles have received. The government pays for the streets and roads on which the automobile runs. It regulates traffic, provides safety devices and lights. Shipping has its harbors dredged, its light house and its coast guard protection. In the same way air transportation should expect its air routes and air terminals to have similar government aids.

Five Years of Air Mail

THE statistical summary of the Air Mail Service covering the years from 1918 to 1923 inclusive, appearing elsewhere in this issue, gives what is probably the most complete and continuous record of the operation of commercial aircraft available. Over thirty thousand trips have been made covering over seven million miles. The average percentage of performance, 91.83, covering as it does several unfortunate experimental periods, and last year's percentage of performance of 96.39 will always be to the credit of the management.

To have achieved the results that have been obtained at the expenditure of approximately six million dollars also indicates that the operation has been efficient and economical. It may be cited as the one instance of government ownership and operation which has not only been a success, but has rendered a great service to aeronautics throughout the world by giving convincing proof of the regularity of airway service.

The International Airplane Races in Dayton

By H. W. KARR

Assistant to President of the National Aeronautic Association

Provision for nearly four times as much prize money as was offered at St. Louis last year and for twelve major aerialistic events is made in the complete program for the 1924 International Air Races at Dayton, Ohio, Oct. 2, 3 and 4, which has been drawn up by the Dayton chapter, N.A.A. and approved by Frederick B. Patterson, president, and the Contest Committee of the association. Mr. Patterson gave his official sanction to the card before sailing for Europe Saturday, Feb. 16, where he will endeavor to interest England, France and Italy in taking part in the Pulitzer high speed race this fall.

Total Prize Money: $43,750

The total amount of prizes to be awarded in cash and Liberty bonds is $43,750. This will be apportioned among the winners of various events in a manner that will make each interesting to the contestant from a financial as well as sporting standpoint.

By increasing the prize money $30,000 this year over the total of 1923, the executive committee of the Dayton chapter hopes to interest many more manufacturers and civilians in the race. It is pointed out that prizes awaiting the winners, in addition to the publicity the airplanes will receive, offer a practical inducement to build especially for the races as do the automobile manufacturers.

Three New Events

Three new events have been instituted this year by the Dayton chapter working with the Contest Committee. The most important of these is the Dayton Daily News race for light airplanes having a total piston displacement of 80 cu. in. or less.

Flown over a five-mile course marked by two regular pylons 60 ft. high and a balloon 500 ft. high, this race will be the most unique of the international gathering. Pilots will be required to pass the pylons near their tops, then climb up even with the balloon basket on going by it. If the contestant fails to reach the balloon altitude he will be required to continue to climb and execute a left-hand turn around it.

The minimum number of planes in this race will be four while the maximum will be forty. So much interest has been created in this event, because it offers individuals a chance to build and fly their own ships, that officials are anticipating a full card. Many civilian employees in the Engineering Division have expressed their intention of building small racing planes around a two-cylinder airplane motor designed by J. E. Moorhouse, of McCook field.

The second new event is a free-for-all race for two, three and four-place airplanes, eight times around a closed course of 15 miles. No less than four nor more than twenty planes will take part in this race. The engines in the competing planes are to be of 180 hp. or less.

A speed and efficiency race for light airplanes having a total piston displacement of 80 cu. in. is the third new event to be introduced at the Dayton meet. This will be ten times around a closed course of five miles. It will be held on the final day in addition to the Detroit News Air Mail race, the Brigadier William A. Mitchell trophy race and the Pulitzer high speed contest.

Date Limit for Entries

Entry blanks have been mailed by the Dayton chapter and will be received until Sept. 1. A 25 per cent penalty will be assessed for entries that come in after Sept. 1 and up to Sept. 8. Those received up until Sept. 15 will be charged an extra 50 per cent.

The foreword to the program and entry blanks reads:

"This aviation meet was primarily scheduled for the purpose of holding the 1924 National Air Races, including the fifth annual contest for the Pulitzer Trophy. However, in order to keep pace with the increasing interest in flying and to stimulate further the development of commercial aviation, the plans have been elaborated to include diversified types of planes, airplane model contests, and exhibitions.

"Being practically assured of several foreign entries for the Pulitzer Trophy Race, the 1924 meet assumes an International aspect.

Twelve Major Events

"The intention is to attract a varied field of entries to compete for prizes to be awarded on the basis of the best combination of high-speed and improved construction, without, however, having a recourse to complicated rules incapable of being satisfactorily applied. For this purpose there will be a series of contests comprising twelve distinct major events, in one or another of which there will be an opportunity for practically every type of airplane to compete. Some additional events are under consideration, but will not be announced until later."

The complete program with the prizes and other incidentals, is outlined below.

On to Dayton Race

Event No. 1. Sept. 20 to Oct. 1—"On to Dayton" race for Dayton Chapter N.A.A. trophy. (Civilians only.) Competing planes must be flown from a point 200 mi. or more (air line) from Wilbur Wright Field, Dayton, Ohio. Flights may start any date after Sept. 20 and the landings must be made after 6 a. m. Sept. 24 and before midnight, Oct. 1. Points will be awarded on averaged speed based on total elapsed time, distance covered and passengers carried.

PRIZES

$3,500 in Liberty Bonds

First prize	$1,000 in Liberty bonds
Second prize	800 in Liberty bonds
Third prize	500 in Liberty bonds
Fourth prize	400 in Liberty bonds
Fifth prize	300 in Liberty bonds
Sixth prize	200 in Liberty bonds
Seventh prize	150 in Liberty bonds
Eighth prize	100 in Liberty bonds
Ninth prize	50 in Liberty bonds

Light Plane Race

Event No. 2. Thursday, Oct. 2, 10:00 a. m.—Free-for-all race for two-seater low horsepower airplanes. (Civilians only.) Competing planes must have a piston displacement of 510 cu. in. or less and carry a total load of 340 lb. This race will be six times around a closed course of 15 mi.

PRIZES

$3,000 in Liberty bonds

First prize	$1,000 in Liberty bonds
Second prize	600 in Liberty bonds
Third prize	500 in Liberty bonds
Fourth prize	400 in Liberty bonds
Fifth prize	300 in Liberty bonds
Sixth prize	200 in Liberty bonds

Race for Two, Three and Four Seaters

Event No. 3. Thursday, Oct. 2, 1:15 p. m.—Free-for-all race for two, three or four-place airplanes. (Civilians only.) Race will be eight times around closed course of 15 mi. for airplanes with engines having total piston displacement of 800 cu. in. or less.

PRIZES

$3,500 in Liberty Bonds

First prize	$1,000 in Liberty bonds
Second prize	700 in Liberty bonds
Third prize	600 in Liberty bonds
Fourth prize	500 in Liberty bonds
Fifth prize	400 in Liberty bonds
Sixth prize	300 in Liberty bonds

Observation Plane Race

Event No. 4. Thursday, Oct. 2, 3:20 p. m.—Race for Observation type (Two-place) airplanes, for Liberty Engine Builders' trophy (civilian and military). Twelve times around a closed course of 15 mi. The competing planes must have an air speed greater than 90 mi./hr. and a total wing area greater than 360 sq. ft.

PRIZES

$3,000 in Liberty Bonds

First prize	$1,000 in Liberty bonds
Second prize	800 in Liberty bonds
Third prize	500 in Liberty bonds
Fourth prize	400 in Liberty bonds
Fifth prize	300 in Liberty bonds

Model Airplane Contest

Event No. 5. Friday, Oct. 3, 9:30 a. m.—Duration race for model airplanes for Mulvihill model trophy. For members of the Junior Flying League, N.A.A. Models will be hand launched and have a wing spread not to exceed 40 in.

PRIZES

$500 in Cash

First prize	$200	Fifth prize	30
Second prize	100	Sixth prize	20
Third prize	75	Seventh prize	15
Fourth prize	50	Eighth prize	10

Light Commercial Plane Race

Event No. 6. Friday, Oct. 3, 11:00 a. m.—Light commercial speed and efficiency race for Aviation Country Club of Detroit trophy. (Civilians only.) Eight times around a closed course of 15 mi.

PRIZES

$4,000 in Liberty Bonds

Speed

First prize	$1,000 in Liberty bonds
Second prize	700 in Liberty bonds
Third prize	300 in Liberty bonds

Efficiency

First prize	$1,000 in Liberty bonds
Second prize	700 in Liberty bonds
Third prize	300 in Liberty bonds

Light Plane Race

Event No. 7. Friday, Oct. 3, 2:00 p. m.—Light airplanes for Dayton Daily News trophy.

PRIZES

$3,250 in Liberty Bonds

First prize	$2,000 in Liberty bonds
Second prize	750 in Liberty bonds
Third prize	500 in Liberty bonds

Large Capacity Planes

Event No. 8. Friday, Oct. 3, 2:45 p. m.—Race for large capacity airplanes for Dayton Chamber of Commerce trophy, civilians and military. Ships with air speed greater than 85 mi./hr. and capable of carrying pay load of 2,000 lb. or over. Ten times around closed course of 15 mi.

PRIZES

$4,000 in Liberty Bonds

First prize	$2,000 in Liberty bonds
Second prize	1,000 in Liberty bonds
Third prize	700 in Liberty bonds
Fourth prize	300 in Liberty bonds

Air Mail Trophy Race

Event No. 9. Saturday, Oct. 4, 11:00 a. m.—Air mail planes for Detroit News Air Mail trophy. U. S. Air Mail pilots. Six times around a closed course of 31.07 mi. (50 km.)

PRIZES

$4,000 in Liberty Bonds

First prize	$1,000 in Liberty bonds
Second prize	800 in Liberty bonds
Third prize	700 in Liberty bonds
Fourth prize	600 in Liberty bonds
Fifth prize	500 in Liberty bonds
Sixth prize	400 in Liberty bonds

Efficiency Race for Light Planes

Event No. 10. Saturday, Oct. 4, 1:15 p. m.—Speed and efficiency race for light airplanes. Civilians only.

PRIZES

$5,000 in Liberty Bonds

Speed

First prize	$1,500 in Liberty bonds
Second prize	1,000 in Liberty bonds
Third prize	500 in Liberty bonds
Fourth prize	400 in Liberty bonds

Efficiency

First prize	$800 in Liberty bonds
Second prize	500 in Liberty bonds
Third prize	300 in Liberty bonds
Fourth prize	200 in Liberty bonds

Mitchel Trophy Race

Event No. 11. Saturday, Oct. 4, 2:30 p. m.—Race for pursuit type planes for Brig. Gen. William A. Mitchell trophy. Military only. Four times around closed course of 31.07 mi. (50 km.)

PRIZES

First prize	Cup
Second prize	Cup
Third prize	Cup

Pulitzer Trophy Race

Event No. 12. Saturday, Oct. 4, 3:45 p. m.—High speed planes for Pulitzer trophy. Civilian and military. Competing planes to have air speed greater than 175 mi./hr., as loaded for start of race, and stalling speed not to exceed 75 mi./hr. Four times around closed course of 31.07 mi. (50 km.)

PRIZES

$10,000 in Liberty Bonds

First prize	$5,000 in Liberty bonds
Second prize	2,500 in Liberty bonds
Third prize	1,500 in Liberty bonds
Fourth prize	1,000 in Liberty bonds

Editor's Note—The technical features of these races will be fully dealt with in a coming issue of AVIATION.

Rickenbacker Opposes Subsidies

Capt. E. V. Rickenbacker, who is one of the staunchest believers in the commercial future of aviation, makes the assertion that aircraft will never become a commercial proposition until "all hope of a subsidy or other government financial support and engineering interference are eliminated."

"I use the term 'interference' advisedly." says Captain Rickenbacker, "because that is the inevitable adjunct to outside financial aid.

"It has been proved that while government money and engineering skill may be able to design an airplane, yet the same factors lack the necessary knowledge and capacity to manufacture it. Army and Navy engineers can design an airplane that is suitable, in fact ideal, for war purposes; but if we become involved in a big war tomorrow, such type of airplane would be useless, for the simple reason that no plants would be ready, equipped and in production in such volume as to make it of any real value. The last war proved that the most useful implements of war were not originally designed or intended for that purpose at all, but for commercial and industrial service. They were already being made in vast quantities, however, and though not ideal, could be adapted to war uses. Ambulances and trucks are good examples.

"No industry has any right to exist or can exist save on its own revenues. The more I think of it, the more fortunate it appears that the automobile was never taken up by governments, given government aid, nor hampered by government suggestions or red tape. Consequently, it has become the world's largest industry.

"Let's look the facts in the face. The advocates of government support for aviation constantly refer to it as an 'infant industry.' Now, truth to tell, it is nothing of the kind. The first automobile that would run was made about 1900. The first commercial automobile, the 'curve-dash' Oldsmobile,

was made in 1901. The Wright Brothers made their first flights in 1903—we celebrated the twentieth anniversary of that on Dec. 17, last. So you see the world's greatest industry is only two or three years older than the so-called 'infant' aircraft industry. The real trouble with that infant is that it has always been fed on 'pap,' never allowed to hustle for itself, to develop its own sinews or an appetite for solid food.

Europe's Early Leadership

"Like many other people, I had been led to believe that the reason Europe originally led us in aircraft was due to government support of the industry there. On my latest trip to Europe I studied this matter thoroughly and I discovered many things that astonished as much as they enlightened me. For example I found that America today leads the world in aircraft. Practically all world's records are held by American aviators using American airplanes powered with American-built motors. France, Germany, England and Italy have not progressed one inch since the end of the war.

"We hear a lot about commercial aviation in Europe but as a matter of fact nothing of the kind exists. Nothing is commercial that does not compete nor earn profits from its own operation. No form of transportation that cannot live off its own revenues in competition with other forms of transportation can be called truly commercial or truly practical. The only way that European Air Lines operate today is on government subsidies—the fares they charge are merely a means of selecting those who may be favored with flight. Those who cannot pay something, of course, cannot ride.

"A subsidy acts as an anaesthetic to initiative. Relieved of the necessity of competing, initiative slumbers and enterprise grows apathetic. Most of the ships that are carrying passengers over the various air lines to Europe today are really not fit to fly. They are obsolete models made for war service and not at all suited to passenger-carrying on a safe or profitable basis.

"If you look for the real origin and early supremacy of aviation in Europe you will find it in the customs of the countries which make of their wealthy young men 'dilettanti.' The son of a wealthy man, in France for example, is considered disgraced if he goes to work. Any commercial occupation is considered unworthy his birth and breeding. Naturally he suffers from ennui and seeks for some outlet for his natural youthful energy and enterprise. This usually takes the form of adventure. It may be tiger-hunting in India, elephant hunting in Africa or experimenting with an airship. It is a remarkable fact that Hubert Latham, one of the most famous of the pioneer aviators, was killed by a buffalo in Africa in one of those periods when he was indulging his other form of adventure. As long as it was within the ability of these young men (and some of them became brilliant engineers in the ardent pursuit of their avocation) Europe led in aircraft.

"American youths take life more seriously. American fathers frown upon any such extravagant expenditure of money. Not until it shows some commercial possibilities and some practical usefulness, do we in this country take up any new device. But when we do, we have a habit of excelling just because we are practical.

Future of Aircraft Industry

"That the aircraft industry will develop and become one of the world's greatest industries is my firm belief. That it will not do so as long as there is any government support or even hope of it, I am equally certain. The very idea of a subsidy is abhorrent to the American mind. That was proven in the recent campaign to put over a ship subsidy. Shipping is supposed to be unprofitable as a business resting on its own foundations. Yet the greatest fortunes and even the dynasties of Europe are founded on money made from shipping, while co-incidentally we have the remarkable condition also existing, that men engaged in shipping receive the poorest pay and the worst treatment of any civilized workers in the world.

"Americans are not interested in the development of any industry that contributes to the welfare only of a few executives. It must perform a real service and contribute to the well-being of many, if it would justify its existence in this country. In the very nature of things a subsidy contributes only to a favored few and serves to throttle industry by destroying initiative and removing the spur of competition. We will have an aircraft industry in this country just as soon as the field is thrown wide open to competition and there is neither favoritism nor handicap.

"The worst of all handicaps is favoritism. As it has been, a few have had access to government funds and these have produced nothing that justified existence. Many others who might enter the field on a strictly business basis find themselves at a disadvantage because anything they might produce would have to compete with the spoon-fed product of favored ones. Subsidies are never impartial. They are not created with that idea in view. Always those nearest the trough glut themselves while those in the background starve and grow constantly less able to force their way to the front.

"I believe it is futile to ask the American people to subsidize any industry out of taxes. Taxes are already a crushing burden. The sooner we quit hoping and thinking in terms of subsidies the sooner will we see factories turning out airplanes in vast quantities and at prices within the reach of millions, just as automobiles are produced today.

"The automobile had its racing era and speed cars performed their part in developing standard designs. Aircraft has gone about as far as it needs to go in that direction—let us now turn the knowledge, experience and the capital to a useful purpose, which is to say the production of commercial airplanes on a purely commercial basis. Then, should war again come upon us we would have millions of machines that would be adapted to war needs—and millions more could be quickly made in plants already tooled up and operating on a volume basis—*a la* the automobile."

The Light Plane Needs an Engine

Editor, AVIATION:

There is just one way to provide a nucleus around which to build up the "light airplane" industry; and that is, for some foresighted manufacturer to produce a series of low-power aviation engines at attractive prices. These low-power engines must be light weight, economical, reliable and designed to blend nicely with modern airplane construction.

At present the radial air cooled type engine seems best suited for the sport airplane, but any type of a well balanced and reliable engine is perfectly permissible. Small engines, however, should have no less than three cylinders. And engines of over twenty-five horsepower should have more than three cylinders, for two reasons; first, to produce smoother torque with less vibration; and second, in case one cylinder ceases to fire, that the percentage of the drop in horsepower will not be great, as in the case of a three cylinder engine if one cylinder ceases to fire, the horsepower drops to one half of the maximum.

Below is a series of engines that ought to provide the "light airplane" industry with a foundation to build upon.

25	hp.	3-4	cyl.	75	lb. complete
50	"	5-6	"	125	" "
80	"	7-9	"	175	" "

These engines should be provided with a hand crank for starting the engine from the rear. And care should be taken in the design, that the exhaust can be easily and neatly manifolded to carry it clear of the fliers. Also, all water cooled engines should be equipped with a radiator, forming a part of and bolted to the engine.

Yet, irrespective of the design, the one thing that this country lacks, is good, reliable and inexpensive low power engines around which to build our "sport planes."

A. WELLINGTON COOK
Washington, R. I., Feb. 10, 1924.

New British Light Plane Engine

Burney and Blackburne of Bookham, England, the makers of the Blackburne motorcycle engine which performed so well in the light plane meet at Lympne last October, have in course of construction a three cylinder radial engine of 1100 cu. cm. capacity which is specially designed for this year's two seater light plane competition instituted by the British Air Ministry.

Relation of Air Power to Sea Power *

By CAPTAIN DUDLEY W. KNOX, U.S.N.

AVIATION has received a multigraphed copy of the following speech delivered to the District of Colombia Department, Reserve Officers' Association of the United States, at Washington, D. C., Dec. 6, 1923. Its is the kind of propaganda that AVIATION has protested against so often. If naval officers would present facts accurately and without distortion, as Admiral Moffett and the members of his staff do, AVIATION would not complain of naval conservatism in air development, but when arguments such as that of Captain McNamee that we published recently, and that of Captain Knox printed below, are made public, it must be evident that aircraft development work for our defense is not receiving the wholehearted encouragement that it should.

AVIATION readers will recognize the inaccuracy of many of Captain Knox's statements—such as "Two hundred Barling bombers will cost $80,000,000;" "Four hits by 10,000 pound bombs are required to put a battleship temporarily out of action;" "The American bombing experiments against battleships not moving, resulted in about 11 per cent direct hits being made from an altitude of about 11,000 ft.;" "The British Agamemnon experiments, however, showed that with a moving target zigzagging, only 2 per cent of hits may be expected from an altitude of about 8,000 ft.;" "We see that the air power substitute for such ship (battleship) would be ten times as expensive;" "General Patrick has stated that in the recent experiment against the Virginia and the New Jersey some of the attacking planes flew 170 mi. passing through three rainstorms and consuming two or three hours' time before they were able to reach the firing point." We are not attempting to reply to this article. We will leave that to others, but we believe that such attacks on aviation should be replied to by those who have been entrusted with the cause of aircraft progress.—EDITOR.

I might very easily devote the entire time available for this talk to any one of several of the existing outstanding needs of the Navy.

For example, we are not keeping up the ratio of naval strength agreed upon for the United States at the Washington Conference. We have already fallen so far behind the other nations that our Navy is only half as powerful as it is supposed to be. Our battleship force instead of being equal to the British in this type is only half as strong; this due to the fact that their ships are modernized while ours are not. We need about 50 per cent more personnel than is in the Navy today if the Treaty Navy is to be properly maintained on a peace basis. To approach our ratio of strength in auxiliary ships we should have at least 18 more high speed cruisers of about 10,000 tons each, and 11 more large submarines of long cruising radius.

These are all matters deserving of the earnest consideration of yourselves and of the entire country if your Navy is to properly safeguard the nation's welfare and interests, and to be preserved as an important instrument of world peace. But I wish to call to your especial attention tonight certain questions pertaining to Aviation which the country looks to the Army and Navy to settle among themselves; and in which the opinions of Reserve Officers should and will have much weight.

Independent Air Force

The first question to be considered is whether Aviation should be taken from the cognizance and control of the services and be formed into an Independent Air Force.

Much propaganda has been directed especially against Naval Aviation remaining as a part of the Navy. For example the Washington Post said editorially in its issue of October 20th: "Airplanes can sink battleships. The only known method of preventing them from sinking battleships is to prevent them from flying over ships. No American battleship hereafter will be safe in war unless an American airplane flies over it." Now while this statement is greatly exaggerated, it contains an important element of truth. Aerial defense is probably the best, though by no means the only means of defending battleships against aerial attack. The Post goes on to advocate very strongly that, principally on this account, Naval Aviation should be taken from the Navy.

Such logic is so palpably unsound as to create a suspicion that the writer of it deliberately ignored logic. Dependence of the Navy upon assistance in the air is not a valid reason for removing Naval Aviation from its control, but a most cogent reason for doing the reverse. The greater the value of air power to the Navy the greater the reason for the Navy controlling its own aviation. Can anyone here imagine separating from the control of Grant or Farragut, or Pershing, or Sims, or Foch, or Jellicoe, some form of power indispensable to their success?

Air Power Indispensable to Fleets

Gentlemen, today air power is absolutely indispensable to the successful operations of your fleet and your army. Preponderant American Naval Aviation will not only render the American fleet immune against aerial attack, but will also greatly increase its fighting power against hostile fleets. Airplane spotting enables ships to do accurate shooting at targets whose hulls are actually out of sight below the horizon. Airplane scouting greatly facilitates the obtaining of complete and timely *information;* the vital importance of which in all military and naval operations I need not dwell upon before this audience. In the future a fleet without adequate Naval Aviation to support it will be only half a fleet, and will be an easy victim for an enemy having power in ships which are properly supported by their own air units.

Let us have no more of the loose thinking and false logic, such as was illustrated above by matter from the Washington Post. That estimable paper is but one of many in the country who are permitting their columns to give a distorted and dangerous view of this new and highly valuable arm of national defense. Aviation is now so indispensable to successful operations on both land and sea that each service must retain absolute control of its own aerial forces.

The British Situation

The advocates of an Independent Air Force in this country often point to the example which the British have set. They overlook the fact that England's geographical situation is the reverse of our own. She is separated by little more than a river from greatly superior air forces on the continent, for which there is no parallel in the United States. In taking Naval Aviation away from the Royal Navy, Britain so seriously crippled her sea power as to call forth the most emphatic and sustained protests from her whole maritime community. The result has been that, in spite of the critical exposure of southern England to air attack, and after several years practical experience with an Independent Air Force, Britain has given back the virtual control of everything pertaining to the operations of Naval Aviation to the Navy. Shall we follow her now in the initial mistake? If so we will surely have to follow her later in switching back to Naval control. None but the Navy can properly utilize and control the operations of Naval Aviation. The two cannot be unscrambled.

The readjustment in England has left the production of all aircraft, including naval types, consolidated under the jurisdiction of the Royal Air Force. I am not disposed to quarrel with the effort being made in this country to consolidate our production. Perhaps it would be desirable. But in considering the matter it should be remembered that

*Speech delivered to the District of Columbia Department, Reserve Officers' Association.

for many years the Navy has necessarily included a great industrial establishment and several corps of eminent specialists in the various branches of engineering. When Aviation had its advent this great establishment turned an early and earnest attention to aeronautical experimentation and development and to the design and production of aircraft; and ever since has been a leader in such matters. The planes which the Army Air Force proposes to fly around the world were designed by the Navy. I seriously question whether any organization in this country is as competent as the Navy, from the viewpoint of both technical personnel and industrial facilities, to undertake the development and production of aircraft on a large scale. The idea is put forward merely as a suggestion that perhaps the best solution of the federal production problem is to consolidate it all within the naval establishment.

Air Power vs. Sea Power

So much for matters related to the consolidation of aviation. Next let us consider whether Air Power is an efficient substitute for Sea Power and for the older forms of coast defense as has been widely claimed.

The basic requirement of Sea Power is the ability to control the broad oceans. It is not sufficient merely to control the coastal waters. This is true because a hostile fleet may do vital damage to the nation by blockading our coast. That would bring incalculable suffering and financial loss to the country for the reason that our factories and other places of industry would have to close down and millions of workers would be thrown out of employment.

Remember that successful blockade can be conducted from a great distance off shore. The German people were brought to the verge of starvation by a blockade conducted from 500 to 1000 mi. from their coast.

Again; invasion from overseas may be countered with the greatest certainty by cutting the enemy's transocean communications. While that line of supply is secure he may continue attack almost indefinitely. Once the water communications are positively severed the enemy is decisively beaten. Our own history affords a striking example of this. In the Revolutionary War the British attack persisted for five years while their sea line of supply remained opened. When the French fleet cut that line, Cornwallis surrendered and the war was over.

Effectiveness of Aircraft

To meet these two exigencies of lifting a blockade or of attacking the communications of an invading army at a long distance from shore, Aviation alone is incompetent. Aviation cannot be effective through more than a narrow zone of about 200 mi. from the coast unless it is carried by, and receives the support of, sea power in ample strength.

Of late we have been surprised by the tremendous advances in the distances which airplanes can cover without alighting. The Martin bomber today can fly 1500 mi. continuously. The Barling Bomber can fly even farther; and doubtless other planes will soon be developed which will be able to fly the 3000 mi. across the continent. But we should not forget that such flights are contingent upon the plane's being stripped of all surplus weight in order to carry the last ounce of fuel. If on the other hand the plane must carry heavy bombs and other war equipment and personnel its radius is reduced in an astounding degree. For example: the Martin bomber which flies 1500 mi. without alighting in a peace condition would have its flight reduced to only 360 mi. when equipped for war. In other words it could not fly to seaward for more than 180 mi. without having to return. Think of the reduction between 1500 mi. and 180 mi. caused merely by being equipped for war!

Operating Range of Aircraft

Future planes are likely to have a considerably greater radius than this, but the actual zones through which they can operate effectively against men-of-war will still be limited to about 200 mi. from the coast, due to the necessity of their being escorted by fighting planes. Otherwise the planes from the hostile ships will be able to completely defeat any number of bombers. Inherently a fighting plane must be small in order to assure it high speed, high ceiling, handiness and quick mobility. These fundamental requirements of a fighting plane necessarily restrict its radius of action through limiting the weights which it can carry. Therefore the fighting plane must remain a comparatively short range type.

There is of course a possibility of the fighting plane being transported by large aircraft with a view to increasing the distance from the coast at which air power may be exerted. But we should remember that opposing ships may easily carry a much greater number of fighting planes than aircraft can possibly carry. In other words, air power operating from the coast cannot exert much strength against ships except through relatively short distances. I think this is a fundamental limitation upon air power. It lacks the necessary range to permit of its being substituted for seapower.

Within the zone of about 200 mi. from the coast of course air power in the future always will be an extremely important adjunct to coast defense. But please note that I say *adjunct;* because many of us have erroneously assumed from recent events that air power is all-powerful against ships which they can reach.

Aircraft Attacks Against Coast Defense

Let us first consider the case of a small raid against a place sufficiently important to warrant risking ships. Such a place at present is defended not only by coast defense guns but by auxiliary minefields as well as other various means. The attacking ships are likely to arrive at an unexpected time;—so that with the element surprise we should include the factor of such weather as the raider may choose in advance. On many coasts haze and storms are frequent. These are circumstances in which bombardment is practicable while the planes simply cannot leave the ground.

But eliminating these unfavorable factors and considering only the question of surprise, the airplane is not as certain a means of defense as the gun because of the fact that the latter can open fire immediately, whereas the airplane may require several hours to get off the ground and reach a proper height before it can deliver its bombs. General Patrick has stated that in the recent experiment against the Virginia and the New Jersey some of the attacking planes flew 170 mi. passing through three rain storms and consuming two or three hours' time before they were able to reach the firing point. Under conditions of surprise, raiding ships may be able to fire nearly all of their ammunition before they would be endangered by planes. I think that it is apparent that while bombing planes are extremely valuable for defense against raiding forces, they are not all-sufficient and that the primary defense must continue to be high powered guns in conjunction with minefields, etc.

Air Power and the Trade Routes

Now let us take the case of a hostile fleet so much superior to our own fleet that it can detach enough ships to make its overseas communications safe and have remaining enough naval power to attempt a landing on our coast. Will air power alone be a sufficient deterrent Much publicity was given to the spectacular sinking of the old battleships Ostfriesland, Virginia, and New Jersey; and the general impression created was that battleships as a type are an easy prey to aerial bombing. I assure you that the logical deductions from those experiments have been perverted. More than anything else the experiment demonstrated that modernized battleships are immune to an unexpected degree against bombs of great size. Moreover the experiments of the British against moving targets have demonstrated that when the element of a moving target is introduced, instead of a fixed target such as was used by our aviators, the percentage of hits by bombs is greatly reduced.

Of course the bombs which explode on the deck of the ship do a great deal of local damage, and those which explode close alongside in the water also do much local damage. But we should not forget that greater damage may be done by gunfire or torpedo fire. The only bomb which can seriously menace the safety of the battleship is the one which penetrates the deck armor and explodes in the interior of the ship. The inherent difficulty of penetrating

even moderately thin armor is a tremendous handicap to the effectiveness of bombs.

The modern battleship is protected by horizontal deck armor of sufficient thickness to prevent penetration by very large bombs. If the bombs could be given high velocity they might penetrate, but with only to propel them their terminal velocity is limited to comparatively small proportions. For example;—at 4000 ft. altitude the terminal velocity is only 500 ft./sec. In order to obtain 1000 ft./sec., a low velocity compared with that attained by a projectile fired from a gun, the plane must drop the bomb from an altitude of 30,000 ft.

Accuracy of Aerial Bombing

It is manifest that dropping from high altitudes must greatly reduce the accuracy of bombing. This is especially true when the firing is directed against a moving target steering irregular zigzag courses, because after the bomb is released from the plane the course and speed of the ship are likely to be changed, so that when the bomb reaches sea level, after its necessarily long time of flight, the ship will not be in the position predicted by the plane and for which the bomb sights were set.

Thus we see a difficult paradox for the bomber; if it goes too high it cannot hit; and if it comes down to an altitude essential for even a small percentage of hits, the hits will be of little value for the reason that their low striking velocity will prevent their penetrating the horizontal deck armor.

There is one possible solution for this difficulty; the use of inordinately heavy bombs; so as to obtain sufficient energy to penetrate in spite of a low striking velocity. This however will be met by the installation of heavier deck armor. Of course a bomb designed to penetrate armor must necessarily be very strong structurally, so that, even if it have sufficient striking energy, it will not break up before penetrating. In other words, it must be somewhat like the armor-piercing projectile fired from a gun. This means that about four-fifths of the weight of the bomb must be put into the container and only one-fifth of that weight will be left for the explosive. For example,—in a 10,000 lb. bomb only about 2,000 lb. of explosives could be carried.

The Question of Heavy Bombs

An extremely important element in this question of utilizing inordinately heavy bombs is the cost of the plane which can handle them. The Martin bomber for example, which can handle a 2000 lb. bomb when fully equipped for war with fuel sufficient for about 350 mi., costs approximately $40,000. The Barling bomber which can handle a 10,000 lb. bomb under similar conditions, costs $400,000 that is to say, ten times as much as the Martin bomber. It is important to emphasize this matter of cost at present because of the popular assumption that air power is very cheap compared to other forms of defense. The converse is the fact.

To illustrate let us assume that four hits by 10,000 lb. bombs are required to put a battleship temporarily out of action. I believe this to be substantially correct. Then how many Barling bombers are necessary to be sure of making four hits against one battleship? The American bombing experiments against battleships not moving, resulted in about 11 per cent of direct hits being made from an altitude of approximately 10,000 ft.; that is with the aid of trial shots to correct sights. The British Agamemnon experiments however, showing that with a moving target, zigzagging, only about 2 per cent of hits may be expected from an altitude of about 8,000 ft. The percentage of hits by bombing must be considerably *further* reduced under battle conditions. Then bombers will be handicapped by attacks of fighting planes, anti-aircraft gunfire, smoke screens, and so forth, and it might very well prove true that less than 1 per cent of hits could be made in battle.

However, let us assume for the sake of argument that 2 per cent of hits can be made and that four hits are necessary to put a battleship out of action. On this basis about 200 planes will be necessary to balance the naval power represented by one battleship.

Two hundred Barling bombers will cost $80,000,000 but they will last for only about five years; whereas a battleship will last twenty years. Therefore, we must multiply the initial cost of the Barling bomber by four, which would amount to $320,000,000. Since a modern battleship costs less than $30,000,000, we see that *the air power substitute for such ship would be ten times as expensive.* At present therefore air power is not only an *inadequate* substitute for sea power but also an inordinately *expensive* one.

Now I hope nobody will misunderstand me. I do not wish to minimize in the slightest degree the exceedingly great importance and value of air power. There is no auxiliary to land power or to sea power which is more desirable than air power.

Aviation in Congress

Jan. 14 House,

Mr. Taylor: A resolution (H. Res. 149) requesting the Secretary of the Navy to furnish the House of Representatives information of all necessary plans for the contemplated flight of the Shenandoah to the north polar regions.

Referred to the Committee on Naval Affairs.

Jan. 17 Senate,

Mr. King: A resolution (S. Res. 126) that the Naval Affairs Committee inquire as to the advisability of restricting and curtailing appropriations for dirigible aircraft and as to the wisdom of constructing any further aircraft of this character by the Government of the United States and report its findings and recommendations to the Senate.

Referred to the Committee on Naval Affairs.

Jan. 17 Senate,

A protest, voiced by Senator Dill of Washington, against the proposed Polar Flight of the Shenandoah.

Aeronautical Chamber of Commerce of America.

Summary of Five Years' Air Mail Operations

Statement of performance from May 15, 1918, the date of establishment, to Dec. 31, 1923

MONTH	Trips possible (scheduled)	Trips defaulted	Trips attempted	Trips uncompleted	Weather encountered: Trips in fog, etc.	Weather encountered: Trips clear	Mileage possible (scheduled)	Miles traveled with mail	Miles ferry and test	Total miles traveled	Per cent of performance	Mail carried (number of letters)	Cost of service	Forced landings Due to—Mechanical causes	Forced landings Due to—Other causes
1918 ..	793	32	761	...	258	535	87,042	81,898	20,650	102,548	94.09	4,720,240	$76,616.59	22	24
1919 ..	1,761	87	1,674	...	603	1,060	430,275	393,066	68,229	461,295	91.35	17,669,700	320,647.70	69	97
1920 ..	4,941	1,009	3,932	328	1,614	2,318	1,107,266	864,128	184,316	1,048,444	78.04	30,975,500	979,997.25	445	385
1921 ..	9,202	512	8,690	400	2,963	5,727	1,846,072	1,713,934	198,799	1,912,733	92.84	46,620,280	1,499,584.10	632	841
1922 ..	8,291	292	7,999	145	2,935	5,064	1,643,657	1,570,089	186,714	1,756,803	95.52	60,487,880	1,417,374.82	206	367
1923 ..	8,072	225	7,847	111	3,745	4,102	1,603,110	1,545,280	325,142	1,870,422	96.39	65,295,920	1,910,422.54	175	327
	33,060	2,157	30,903	984	12,118	18,806	6,717,422	6,168,395	983,850	7,152,245	91.83	225,769,520	6,204,643.00	1,549	2,041

New York-Washington Route inaugurated May 15, 1918 (discontinued May 31, 1921). Chicago-St. Louis Route inaugurated Aug. 16, 1920 (discontinued June 30, 1921). Twin Cities (Minneapolis and St. Paul)-Chicago Route inaugurated Dec. 1, 1920 (discontinued June 30, 1921). First leg of the New York-San Francisco Route inaugurated between Cleveland and Chicago May 15, 1919; second leg, New York to Cleveland, inaugurated July 1, 1919; third leg, Chicago to Omaha, inaugurated May 15, 1920; the last leg, Omaha to San Francisco, inaugurated Sept. 8, 1920. The Transcontinental is the only route operated by the Post Office Department. (Contract routes are in force between Seattle, Wash., and Victoria, B. C.; and between New Orleans and Pilottown, La. These contract routes were established for the purpose of advancing the delivery of foreign mails. At present the Post Office Department has no authority to establish routes for the carrying of mail on domestic or inland routes.

Schneider Cup Race at Baltimore, Oct. 24-25

N.A.A. Issues General Regulations of International Contest

The Flying Club of Baltimore has received preliminary sanction to stage the Jacques-Schneider International Seaplane Race. The dates chosen are Oct. 24-25.

It is planned to hold three races on these dates. On Oct. 24 there will be two races, one at 10 a. m. and one at 2.00 p. m. for which $1000 in prize money will be given for each race, in addition to silver cup. On the morning of Oct. 25, at 10.00 a. m., the Seaworthiness & Navigability Test for Schneider Cup contestants will be held, and at 2.00 p. m. Oct. 25, the Schneider Cup will be contested.

The Flying Club of Baltimore has made a contract with the United Railways & Electric Co., which owns Bay Shore Park on the Chesapeake Bay, for the use of this property as the home station. The other turning points will be at Gibson Island and at Hunting Field Point on the eastern shore of Maryland.

The Racing Course

The course will be 50 km. in length, in the form of an almost equilateral triangle, which the Schneider Cup contestants must cover seven times, making a total distance of 350 km. (189 naut. mi.) Provisions will be made at Bay Shore to house at least twelve planes for the Schneider Cup contestants, and provisions for housing and messing mechanical personnel will be made.

The Flying Club of Baltimore will take care of three mechanics per plane plus one crew captain per team during the entire stay in Baltimore. In addition, the Southern Hotel of Baltimore will provide quarters for the pilots. The restaurant at Bay Shore will be used for sleeping and living quarters for the mechanics and it will be in temporary operation for messing purposes.

Following are the main points of the general regulations for the 1924 Schneider Cup Race, as drawn up by the Contest Committee of the National Aeronautics Association:

Navigability and Watertightness Test

This eliminating trial will begin with a navigability test and be followed by a watertightness test. These two tests are intended to establish the seaworthiness of the machine.

Each machine must complete a course of from 5 to 10 naut. mi. over the sea, or in a creek, gulf, estuary, or bay, as decided by the Contest Committee.

For this test the pilot must taxi over the starting line, then rise and continue the course, during which he must taxi the machine over two distances of one-half a nautical mile at a minimum speed of 12 knots, the limits of each of these distances being indicated by two buoys. The remainder of the course will be covered in flight. The pilot must, however, alight again before completing the course and taxi over the finishing line.

The Contest Committee may allow a pilot who has been unsuccessful in this test to make a second and final attempt, after all pilots have had a first attempt.

Mooring and Repairs

After having taxied over the finishing line, the machine must be moored immediately to a buoy allotted beforehand, where it must remain afloat for six hours without anyone on board. Any machine leaving its moorings during this period will be disqualified.

No repairs will be allowed during the navigability and watertightness tests. Except for changing the propeller, which is allowed, the machine must not undergo any modification between the above tests and the speed contest. It will be stamped or sealed to ensure this provision.

Speed Contest

Planes may be started all together or at intervals, as shall be decided by the Contest Committee. If the planes are started at intervals the order of starting shall be drawn by lot and the hour of starting fixed by the Contest Committee.

The Schneider Cup—Symbolizing Zephyr kissing the waves

The starting line must be crossed on the water, at which time there must be contact between the water and the principal floats or floats supporting the machine. The finish line must be crossed in flight.

Planes must not leave the water until after crossing the starting line. Any plane so doing is subject to disqualification.

Pilots are at liberty to have the assistance of motor or row boats during a ten-minute period prior to the start, while in a reserved area, but all such boats must leave the reserved area immediately after the starting signal. No sinkers, buoys, sea anchors, or any similar devices may be used either by the pilots or their attendant craft.

Alightings during the Speed Contest are allowed.

Repairs are permitted but must be carried out by the crew on the water by means of what is on board without receiving any outside assistance. The machine may, however, anchor, moor, or maneuver under its own power, but must not be beached.

Fuel replenishments are not allowed, except from stores carried on board.

In the event of unfavorable weather the Contest Committee may postpone the contest as often as they think fit.

Each seaplane shall have a number assigned to it by the Contest Committee, which shall be painted on the bottom surface of the lower wing and on each side of the fuselage clear of the wing, in characters as large and clear as possible. It shall have no other numbering or letterings over twelve inches in height.

Entries Close April 1

Entries close on April 1, 1924. Names of pilots and their alternates must be received at the office of the Contest Committee of the National Aeronautic Association, 1623 H Street, N. W., Washington, D. C., U. S. A., not later than thirty days prior to the contest.

Competing planes should preferably be shipped to the Flying Club of Baltimore *via boats docking at Baltimore.*

A Historical Parallel

Quaint Early Opposition to Railway Mail Service

In the debate in the House of Representatives on the Air Mail, Representative C. William Ramseyer of Iowa brought out some interesting parallels between the opposition to the railroads carrying mails in the early days of the railroad and the present attitude toward the Air Mail. He said:

"Two years ago I got an old history from the Post Office Department, entitled 'A History of the Railway Mail Service.' It is very interesting to find that back in the early days they had the same controversy about the Railway Mail Service that is now going on about aerial mail. The controversy then was concerning the transition from the stage coach to the railroads. Now we have doubts about leaving the railroads for the airships.

"I was so much interested in that history that I copied a few paragraphs from pages 22 and 23. This history was prepared in 1885. I have these paragraphs here and wish to read just a few of them in my time. Speaking of this era in 1835, the historian says:

"'At this time grave doubts were entertained as to whether the railway service could ever be made acceptable to the public or the department, and frequent threats are on record that the contractors will be remanded to the stage coaches. February 18, 1835, on account of many complaints of gross irregularity in this transportation of the newspaper mail between Philadelphia and Harrisburg and Carlisle, the contractors were informed by the department that if the irregularities were repeated "this mode of transportation by the railroad must be at once abandoned, and you will be required to resume your double daily line of four-horse post coaches between Philadelphia and Chambersburg."

"March 27, 1835, a letter from the department reveals the fact that the contractors, after having used the railroad from Baltimore to Frederick for some time, ask permission to resume their trips by stage coach. On this request the Postmaster General made the following indorsement: 'The contractors will go by railroad or otherwise, so that the mail is carried in due time.'

"A letter addressed by the department, March 28, 1835, to James Reeside, contractor, complains that 'The mail from New York to Philadelphia, by railroad, is usually late, taking more than 13 hours from Jersey City. * * This was hardly the case in the worst of bad staging.'

"The intimation is given to the contractor that a repetition of these evils will be followed by directions from the department to abandon this mode of conveyance, and to resume his former route—that is, go back from the railway to the stages.

"Dated April 30, 1835, there is a paper in the department which reads like this: 'There have been two failures of the mail from beyond Philadelphia at this city in the course of the present week, occasioned, it is said, by accidents to the locomotives on the Amboy & Camden Railroad. These occurrences are peculiarly annoying at this time and have become the subject of public notice and complaint. From the experiences we have had, the adaptation of the railroad to the purpose of mail transportation is becoming every day more and more questionable. It is very apparent that it can not be relied on with that degree of certainty which is all-important in the transmission of the mail, and without which disappointments occur to the public, and complaints are rung in the ears of the department from every quarter of the country.

"Then too, with regard to contracts, I find in this history:

"'The early notices of acceptance of proposals on lines where railroads were in course of construction were, many of them, qualified by the phrase, 'on condition that in case any arrangement shall hereafter be made under the authority of Congress to carry the mail for the whole or any part of the route on railroad, then your contract to be annulled, or there shall be a pro rata deduction, as the case may be.'

"February 26, 1836, the contractor on route between Augusta and Charleston is authorized to make a subcontract with the railroad company if he desires to do so. The letter notifying the contractor says: 'The Postmaster General will not object to your making a subcontract with the railroad company provided all the offices be supplied, and provided the expedition furnished by the railroad involve no extra expense.'

"History repeats itself. Our forefathers were afraid of the railways. Now we shy at the airplanes.

"Mr. Chairman, I thought these paragraphs, although they might not be of special interest to the Members of the House, might interest some people out in the country who will be reading the Record of the proceedings here today."

Napier Cub Passes Fifty Hour Test

The Napier Cub 1000 hp. aircraft engine has been officially accepted by the British Air Ministry after successfully passing the latter's standard 50 hr. endurance test. This test consists of five ten hour runs at 90 per cent full power.

This engine is the biggest power plant in the world that has passed a similar endurance test.

Preparing for New Altitude Record

The Nieuport Co. of France is experimenting with a new high altitude pursuit plane, type 40, with which this firm proposes to make a new altitude record attempt. The plane is equipped with a 300 hp. Hispano-Suiza engine.

Czechoslovakian Aviation Budget

The aviation budget of Czechoslovakia for the year 1924 is 163,000,000 Czechoslovak crowns, an increase of 26,000,000 crowns over last year's estimate.

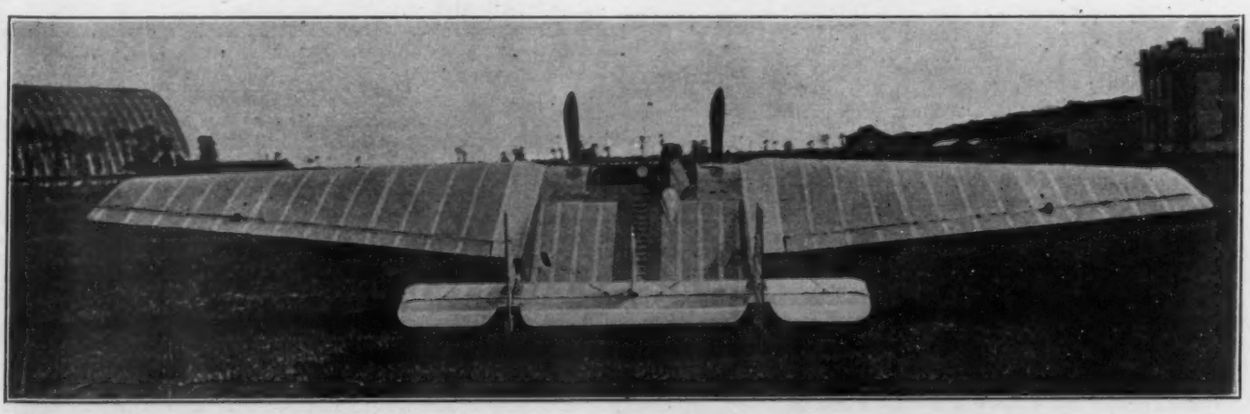

Photo Wide World

A French twin-engined light plane—The de Monge type 7.4, which is fitted with two 35 hp. Anzani engines. Span, 33 ft. Length, 17.5 ft. Wing area, 248 sq. ft. Weight empty, 880 lb. Weight loaded, 1400 lb. Full speed, 87 mi./hr. This ship serves as a flying scale model of the proposed transatlantic plane

for many years the Navy has necessarily included a great industrial establishment and several corps of eminent specialists in the various branches of engineering. When Aviation had its advent this great establishment turned an early and earnest attention to aeronautical experimentation and development and to the design and production of aircraft; and ever since has been a leader in such matters. The planes which the Army Air Force proposes to fly around the world were designed by the Navy. I seriously question whether any organization in this country is as competent as the Navy, from the viewpoint of both technical personnel and industrial facilities, to undertake the development and production of aircraft on a large scale. The idea is put forward merely as a suggestion that perhaps the best solution of the federal production problem is to consolidate it all within the naval establishment.

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Again; invasion from overseas may be countered with the greatest certainty by cutting the enemy's transocean communications. While that line of supply is secure he may continue attack almost indefinitely. Once the water communications are positively severed the enemy is decisively beaten. Our own history affords a striking example of this. In the Revolutionary War the British attack persisted for five years while their sea line of supply remained opened. When the French fleet cut that line, Cornwallis surrendered and the war was over.

Effectiveness of Aircraft

To meet these two exigencies of lifting a blockade or of attacking the communications of an invading army at a long distance from shore, Aviation alone is incompetent. Aviation cannot be effective through more than a narrow zone of about 200 mi. from the coast unless it is carried by, and receives the support of, sea power in ample strength.

Of late we have been surprised by the tremendous advances in the distances which airplanes can cover without alighting. The Martin bomber today can fly 1500 mi. continuously. The Barling Bomber can fly even farther; and doubtless other planes will soon be developed which will be able to fly the 3000 mi. across the continent. But we should not forget that such flights are contingent upon the plane's being stripped of all surplus weight in order to carry the last ounce of fuel. If on the other hand the plane must carry heavy bombs and other war equipment and personnel its radius is reduced in an astounding degree. For example: the Martin bomber which flies 1500 mi. without alighting in a peace condition would have its flight reduced to only 360 mi. when equipped for war. In other words it could not fly to seaward for more than 180 mi. without having to return. Think of the reduction between 1500 mi. and 180 mi. caused merely by being equipped for war!

Operating Range of Aircraft

Future planes are likely to have a considerably greater radius than this, but the actual zones through which they can operate effectively against men-of-war will still be limited to about 200 mi. from the coast, due to the necessity of their being escorted by fighting planes. Otherwise the planes from the hostile ships will be able to completely defeat any number of bombers. Inherently a fighting plane must be small in order to assure it high speed, high ceiling, handiness and quick mobility. These fundamental requirements of a fighting plane necessarily restrict its radius of action through limiting the weights which it can carry. Therefore the fighting plane must remain a comparatively short range type.

There is of course a possibility of the fighting plane being transported by large aircraft with a view to increasing the distance from the coast at which air power may be exerted. But we should remember that opposing ships may easily carry a much greater number of fighting planes than aircraft can possibly carry. In other words, air power operating from the coast cannot exert much strength against ships except through relatively short distances. I think this is a fundamental limitation upon air power. It lacks the necessary range to permit of its being substituted for seapower.

Within the zone of about 200 mi. from the coast of course air power in the future always will be an extremely important adjunct to coast defense. But please note that I say *adjunct;* because many of us have erroneously assumed from recent events that air power is all-powerful against ships which they can reach.

Aircraft Attacks Against Coast Defense

Let us first consider the case of a small raid against a place sufficiently important to warrant risking ships. Such a place at present is defended not only by coast defense guns but by auxiliary minefields as well as other various means. The attacking ships are likely to arrive at an unexpected time;—so that with the element surprise we should include the factor of such weather as the raider may choose in advance. On many coasts haze and storms are frequent. These are circumstances in which bombardment is practicable while the planes simply cannot leave the ground.

But eliminating these unfavorable factors and considering only the question of surprise, the airplane is not as certain a means of defense as the gun because of the fact that the latter can open fire immediately, whereas the airplane may require several hours to get off the ground and reach a proper height before it can deliver its bombs. General Patrick has stated that in the recent experiment against the Virginia and the New Jersey some of the attacking planes flew 170 mi. passing through three rain storms and consuming two or three hours' time before they were able to reach the firing point. Under conditions of surprise, raiding ships may be able to fire nearly all of their ammunition before they would be endangered by planes. I think that it is apparent that while bombing planes are extremely valuable for defense against raiding forces, they are not all-sufficient and that the primary defense must continue to be high powered guns in conjunction with minefields, etc.

Air Power and the Trade Routes

Now let us take the case of a hostile fleet so much superior to our own fleet that it can detach enough ships to make its overseas communications safe and have remaining enough naval power to attempt a landing on our coast. Will air power alone be a sufficient deterrent Much publicity was given to the spectacular sinking of the old battleships Ostfriesland, Virginia, and New Jersey; and the general impression created was that battleships as a type are an easy prey to aerial bombing. I assure you that the logical deductions from those experiments have been perverted. More than anything else the experiment demonstrated that modernized battleships are immune to an unexpected degree against bombs of great size. Moreover the experiments of the British against moving targets have demonstrated that when the element of a moving target is introduced, instead of a fixed target such as was used by our aviators, the percentage of hits by bombs is greatly reduced.

Of course the bombs which explode on the deck of the ship do a great deal of local damage, and those which explode close alongside in the water also do much local damage. But we should not forget that greater damage may be done by gunfire or torpedo fire. The only bomb which can seriously menace the safety of the battleship is the one which penetrates the deck armor and explodes in the interior of the ship. The inherent difficulty of penetrating

even moderately thin armor is a tremendous handicap to the effectiveness of bombs.

The modern battleship is protected by horizontal deck armor of sufficient thickness to prevent penetration by very large bombs. If the bombs could be given high velocity they might penetrate, but with only to propel them their terminal velocity is limited to comparatively small proportions. For example;—at 4000 ft. altitude the terminal velocity is only 500 ft./sec. In order to obtain 1000 ft./sec., a low velocity compared with that attained by a projectile fired from a gun, the plane must drop the bomb from an altitude of 30,000 ft.

Accuracy of Aerial Bombing

It is manifest that dropping from high altitudes must greatly reduce the accuracy of bombing. This is especially true when the firing is directed against a moving target steering irregular zigzag courses, because after the bomb is released from the plane the course and speed of the ship are likely to be changed, so that when the bomb reaches sea level, after its necessarily long time of flight, the ship will not be in the position predicted by the plane and for which the bomb sights were set.

Thus we see a difficult paradox for the bomber; if it goes too high it cannot hit; and if it comes down to an altitude essential for even a small percentage of hits, the hits will be of little value for the reason that their low striking velocity will prevent their penetrating the horizontal deck armor.

There is one possible solution for this difficulty; the use of inordinately heavy bombs; so as to obtain sufficient energy to penetrate in spite of a low striking velocity. This however will be met by the installation of heavier deck armor. Of course a bomb designed to penetrate armor must necessarily be very strong structurally, so that, even if it have sufficient striking energy, it will not break up before penetrating. In other words, it must be somewhat like the armor-piercing projectile fired from a gun. This means that about four-fifths of the weight of the bomb must be put into the container and only one-fifth of that weight will be left for the explosive. For example,—in a 10,000 lb. bomb only about 2,000 lb. of explosives could be carried.

The Question of Heavy Bombs

An extremely important element in this question of utilizing inordinately heavy bombs is the cost of the plane which can handle them. The Martin bomber for example, which can handle a 2000 lb. bomb when fully equipped for war with fuel sufficient for about 350 mi., costs approximately $40,000. The Barling bomber which can handle a 10,000 lb. bomb under similar conditions, costs $400,000 that is to say, ten times as much as the Martin bomber. It is important to emphasize this matter of cost at present because of the popular assumption that air power is very cheap compared to other forms of defense. The converse is the fact.

To illustrate let us assume that four hits by 10,000 lb. bombs are required to put a battleship temporarily out of action. I believe this to be substantially correct. Then how many Barling bombers are necessary to be sure of making four hits against one battleship? The American bombing experiments against battleships not moving, resulted in about 11 per cent of direct hits being made from an altitude of approximately 10,000 ft.; that is with the aid of trial shots to correct sights. The British Agamemnon experiments however, showing that with a moving target, zigzagging, only about 2 per cent of hits may be expected from an altitude of about 8,000 ft. The percentage of hits by bombing must be considerably *further* reduced under battle conditions. Then bombers will be handicapped by attacks of fighting planes, anti-aircraft gunfire, smoke screens, and so forth, and it might very well prove true that less than 1 per cent of hits could be made in battle.

However, let us assume for the sake of argument that 2 per cent of hits can be made and that four hits are necessary to put a battleship out of action. On this basis about 200 planes will be necessary to balance the naval power represented by one battleship.

Two hundred Barling bombers will cost $80,000,000 but they will last for only about five years; whereas a battleship will last twenty years. Therefore, we must multiply the initial cost of the Barling bomber by four, which would amount to $320,000,000. Since a modern battleship costs less than $30,000,000, we see that *the air power substitute for such ship would be ten times as expensive.* At present therefore air power is not only an *inadequate* substitute for sea power but also an inordinately *expensive* one.

Now I hope nobody will misunderstand me. I do not wish to minimize in the slightest degree the exceedingly great importance and value of air power. There is no auxiliary to land power or to sea power which is more desirable than air power.

Aviation in Congress

Jan. 14 House,

Mr. Taylor: A resolution (H. Res. 149) requesting the Secretary of the Navy to furnish the House of Representatives information of all necessary plans for the contemplated flight of the Shenandoah to the north polar regions.

Referred to the Committee on Naval Affairs.

Jan. 17 Senate,

Mr. King: A resolution (S. Res. 126) that the Naval Affairs Committee inquire as to the advisability of restricting and curtailing appropriations for dirigible aircraft and as to the wisdom of constructing any further aircraft of this character by the Government of the United States and report its findings and recommendations to the Senate.

Referred to the Committee on Naval Affairs.

Jan. 17 Senate,

A protest, voiced by Senator Dill of Washington, against the proposed Polar Flight of the Shenandoah.

Aeronautical Chamber of Commerce of America.

Summary of Five Years' Air Mail Operations

Statement of performance from May 15, 1918, the date of establishment, to Dec. 31, 1923

MONTH	*Trips possible (scheduled)*	*Trips defaulted*	*Trips attempted*	*Trips uncompleted*	*Weather encountered Trips in fog, etc.*	*Trips clear*	*Mileage possible (scheduled)*	*Miles traveled with mail*	*Miles ferry and test*	*Total miles traveled*	*Per cent performance*	*Mail carried (number of letters)*	*Cost of service*	*Forced landings Due to— Mechanical causes*	*Other causes*
1918 ..	793	32	761	...	258	535	87,042	81,898	20,650	102,548	94.09	4,720,240	$76,616.59	22	24
1919 ..	1,761	87	1,674	...	603	1,060	430,275	393,066	68,229	461,295	91.35	17,669,700	320,647.70	69	97
1920 ..	4,941	1,009	3,932	328	1,614	2,318	1,107,266	864,128	184,316	1,048,444	78.04	30,975,500	979,997.25	445	385
1921 ..	9,202	512	8,690	400	2,963	5,727	1,846,072	1,713,934	198,799	1,912,733	92.84	46,620,280	1,499,584.10	632	841
1922 ..	8,291	292	7,999	145	2,935	5,064	1,643,657	1,570,089	186,714	1,756,803	95.52	60,487,880	1,417,374.82	206	367
1923 ..	8,072	225	7,847	111	3,745	4,102	1,603,110	1,545,280	325,142	1,870,422	96.39	65,295,920	1,910,422.54	175	327
	33,060	2,157	30,903	984	12,118	18,806	6,717,422	6,168,395	983,850	7,152,245	91.83	225,769,520	6,204,643.00	1,549	2,041

New York-Washington Route inaugurated May 15, 1918 (discontinued May 31, 1921). Chicago-St. Louis Route inaugurated Aug. 16, 1920 (discontinued June 30, 1921). Twin Cities (Minneapolis and St. Paul)-Chicago Route inaugurated Dec. 1, 1920 (discontinued June 30, 1921). First leg of the New York-San Francisco Route inaugurated between Cleveland and Chicago May 15, 1919; second leg, New York to Cleveland, inaugurated July 1, 1919; third leg, Chicago to Omaha, inaugurated May 15, 1920; the last leg, Omaha to San Francisco, inaugurated Sept. 8, 1920. The Transcontinental is the only route operated by the Post Office Department. Contract routes are in force between Seattle, Wash., and Victoria, B. C.; and between New Orleans and Pilottown, La. These contract routes were established for the purpose of advancing the delivery of foreign mails. At present the Post Office Department has no authority to establish routes for the carrying of mail on domestic or inland routes.

Schneider Cup Race at Baltimore, Oct. 24-25

N.A.A. Issues General Regulations of International Contest

The Flying Club of Baltimore has received preliminary sanction to stage the Jacques-Schneider International Seaplane Race. The dates chosen are Oct. 24-25.

It is planned to hold three races on these dates. On Oct. 24 there will be two races, one at 10 a. m. and one at 2.00 p. m. for which $1000 in prize money will be given for each race, in addition to silver cup. On the morning of Oct. 25, at 10.00 a. m., the Seaworthiness & Navigability Test for Schneider Cup contestants will be held, and at 2.00 p. m. Oct. 25, the Schneider Cup will be contested.

The Flying Club of Baltimore has made a contract with the United Railways & Electric Co., which owns Bay Shore Park on the Chesapeake Bay, for the use of this property as the home station. The other turning points will be at Gibson Island and at Hunting Field Point on the eastern shore of Maryland.

The Racing Course

The course will be 50 km. in length, in the form of an almost equilateral triangle, which the Schneider Cup contestants must cover seven times, making a total distance of 350 km. (189 naut. mi.) Provisions will be made at Bay Shore to house at least twelve planes for the Schneider Cup contestants, and provisions for housing and messing mechanical personnel will be made.

The Flying Club of Baltimore will take care of three mechanics per plane plus one crew captain per team during the entire stay in Baltimore. In addition, the Southern Hotel of Baltimore will provide quarters for the pilots. The restaurant at Bay Shore will be used for sleeping and living quarters for the mechanics and it will be in temporary operation for messing purposes.

Following are the main points of the general regulations for the 1924 Schneider Cup Race, as drawn up by the Contest Committee of the National Aeronautics Association:

Navigability and Watertightness Test

This eliminating trial will begin with a navigability test and be followed by a watertightness test. These two tests are intended to establish the seaworthiness of the machine.

Each machine must complete a course of from 5 to 10 naut. mi. over the sea, or in a creek, gulf, estuary, or bay, as decided by the Contest Committee.

For this test the pilot must taxi over the starting line, then rise and continue the course, during which he must taxi the machine over two distances of one-half a nautical mile at a minimum speed of 12 knots, the limits of each of these distances being indicated by two buoys. The remainder of the course will be covered in flight. The pilot must, however, alight again before completing the course and taxi over the finishing line.

The Contest Committee may allow a pilot who has been unsuccessful in this test to make a second and final attempt, after all pilots have had a first attempt.

Mooring and Repairs

After having taxied over the finishing line, the machine must be moored immediately to a buoy allotted beforehand, where it must remain afloat for six hours without anyone on board. Any machine leaving its moorings during this period will be disqualified.

No repairs will be allowed during the navigability and watertightness tests. Except for changing the propeller, which is allowed, the machine must not undergo any modification between the above tests and the speed contest. It will be stamped or sealed to ensure this provision.

Speed Contest

Planes may be started all together or at intervals, as shall be decided by the Contest Committee. If the planes are started at intervals the order of starting shall be drawn by lot and the hour of starting fixed by the Contest Committee.

The Schneider Cup—Symbolizing Zephyr kissing the waves

The starting line must be crossed on the water, at which time there must be contact between the water and the principal floats or floats supporting the machine. The finish line must be crossed in flight.

Planes must not leave the water until after crossing the starting line. Any plane so doing is subject to disqualification.

Pilots are at liberty to have the assistance of motor or row boats during a ten-minute period prior to the start, while in a reserved area, but all such boats must leave the reserved area immediately after the starting signal. No sinkers, buoys, sea anchors, or any similar devices may be used either by the pilots or their attendant craft.

Alightings during the Speed Contest are allowed.

Repairs are permitted but must be carried out by the crew on the water by means of what is on board without receiving any outside assistance. The machine may, however, anchor, moor, or maneuver under its own power, but must not be beached.

Fuel replenishments are not allowed, except from stores carried on board.

In the event of unfavorable weather the Contest Committee may postpone the contest as often as they think fit.

Each seaplane shall have a number assigned to it by the Contest Committee, which shall be painted on the bottom surface of the lower wing and on each side of the fuselage clear of the wing, in characters as large and clear as possible. It shall have no other numbering or letterings over twelve inches in height.

Entries Close April 1

Entries close on April 1, 1924. Names of pilots and their alternates must be received at the office of the Contest Committee of the National Aeronautic Association, 1623 H Street, N. W., Washington, D. C., U. S. A., not later than thirty days prior to the contest.

Competing planes should preferably be shipped to the Flying Club of Baltimore *via boats docking at Baltimore.*

A Historical Parallel

Quaint Early Opposition to Railway Mail Service

In the debate in the House of Representatives on the Air Mail, Representative C. William Ramseyer of Iowa brought out some interesting parallels between the opposition to the railroads carrying mails in the early days of the railroad and the present attitude toward the Air Mail. He said:

"Two years ago I got an old history from the Post Office Department, entitled 'A History of the Railway Mail Service.' It is very interesting to find that back in the early days they had the same controversy about the Railway Mail Service that is now going on about aerial mail. The controversy then was concerning the transition from the stage coach to the railroads. Now we have doubts about leaving the railroads for the airships.

"I was so much interested in that history that I copied a few paragraphs from pages 22 and 23. This history was prepared in 1885. I have these paragraphs here and wish to read just a few of them in my time. Speaking of this era in 1835, the historian says:

"'At this time grave doubts were entertained as to whether the railway service could ever be made acceptable to the public or the department, and frequent threats are on record that the contractors will be remanded to the stage coaches. February 18, 1835, on account of many complaints of gross irregularity in this transportation of the newspaper mail between Philadelphia and Harrisburg and Carlisle, the contractors were informed by the department that if the irregularities were repeated "this mode of transportation by the railroad must be at once abandoned, and you will be required to resume your double daily line of four-horse post coaches between Philadelphia and Chambersburg."

"March 27, 1835, a letter from the department reveals the fact that the contractors, after having used the railroad from Baltimore to Frederick for some time, ask permission to resume their trips by stage coach. On this request the Postmaster General made the following indorsement: 'The contractors will go by railroad or otherwise, so that the mail is carried in due time.'

"A letter addressed by the department, March 28, 1835, to James Reeside, contractor, complains that 'The mail from New York to Philadelphia, by railroad, is usually late, taking more than 13 hours from Jersey City. * * This was hardly the case in the worst of bad staging.'

"The intimation is given to the contractor that a repetition of these evils will be followed by directions from the department to abandon this mode of conveyance, and to resume his former route—that is, go back from the railway to the stages.

"Dated April 30, 1835, there is a paper in the department which reads like this: 'There have been two failures of the mail from beyond Philadelphia at this city in the course of the present week, occasioned, it is said, by accidents to the locomotives on the Amboy & Camden Railroad. These occurrences are peculiarly annoying at this time and have become the subject of public notice and complaint. From the experiences we have had, the adaptation of the railroad to the purpose of mail transportation is becoming every day more and more questionable. It is very apparent that it can not be relied on with that degree of certainty which is all-important in the transmission of the mail, and without which disappointments occur to the public, and complaints are rung in the ears of the department from every quarter of the country.

"Then too, with regard to contracts, I find in this history:

"'The early notices of acceptance of proposals on lines where railroads were in course of construction were, many of them, qualified by the phrase, 'on condition that in case any arrangement shall hereafter be made under the authority of Congress to carry the mail for the whole or any part of the route on railroad, then your contract to be annulled, or there shall be a pro rata deduction, as the case may be.'

"February 26, 1836, the contractor on route between Augusta and Charleston is authorized to make a subcontract with the railroad company if he desires to do so. The letter notifying the contractor says: 'The Postmaster General will not object to your making a subcontract with the railroad company provided all the offices be supplied, and provided the expedition furnished by the railroad involve no extra expense.'

"History repeats itself. Our forefathers were afraid of the railways. Now we shy at the airplanes.

"Mr. Chairman, I thought these paragraphs, although they might not be of special interest to the Members of the House, might interest some people out in the country who will be reading the Record of the proceedings here today."

Napier Cub Passes Fifty Hour Test

The Napier Cub 1000 hp. aircraft engine has been officially accepted by the British Air Ministry after successfully passing the latter's standard 50 hr. endurance test. This test consists of five ten hour runs at 90 per cent full power.

This engine is the biggest power plant in the world that has passed a similar endurance test.

Preparing for New Altitude Record

The Nieuport Co. of France is experimenting with a new high altitude pursuit plane, type 40, with which this firm proposes to make a new altitude record attempt. The plane is equipped with a 300 hp. Hispano-Suiza engine.

Czechoslovakian Aviation Budget

The aviation budget of Czechoslovakia for the year 1924 is 163,000,000 Czechoslovak crowns, an increase of 26,000,000 crowns over last year's estimate.

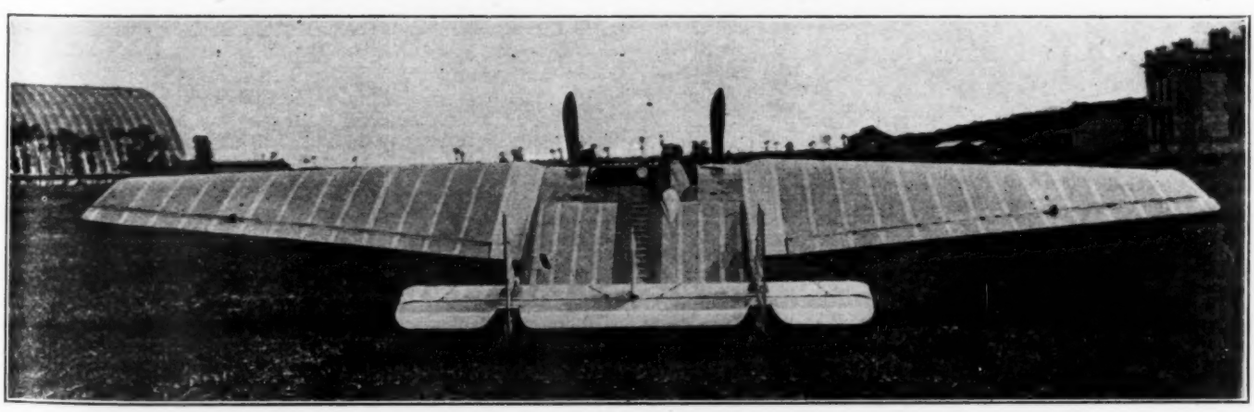


Photo Wide World

A French twin-engined light plane—The de Monge type 7.4, which is fitted with two 35 hp. Anzani engines. Span, 33 ft. Length, 17.5 ft. Wing area, 248 sq. ft. Weight empty, 880 lb. Weight loaded, 1400 lb. Full speed, 87 mi./hr. This ship serves as a flying scale model of the proposed transatlantic plane

Regulations of National Balloon Race

San Antonio, Texas, April 23, 1924

The National Elimination Balloon Race for 1924, conducted under the auspices of the San Antonio Aeronautic Association and the regulations of the Fédération Aéronautique Internationale, will be held on April 23, 1924, at Kelly Field, San Antonio, Tex. Following are the salient points of the regulations.

General Regulations

The race will be open to all persons qualified under the present regulations of the National Aeronautic Association of the United States, using free balloons of the 3rd, 4th and 5th categories as is indicated in Article 25 of the F.A.I. regulations.

The race will be for distance, to be measured on the arc of a great circle between the starting and landing points, and also for the purpose of selecting contestants to represent the United States in the International Balloon Race of 1924.

The following cash prizes will be offered:

First Prize	—$1000	Fourth Prize	—$300
Second Prize	— 800	Fifth Prize	— 200
Third Prize	— 600	Sixth Prize	— 100

A bonus of $100.00 will be given to the pilot of each balloon starting in the race.

Balloons and their full equipment must be delivered to Kelly Field, San Antonio, Tex., not later than April 20. Those arriving after that date will be subject to disqualification at the discretion of the referee. All shipments must be clearly marked with the name of the owner and the words "National Balloon Race."

Contestants are urgently requested to send their material in a single shipment and to send telegraphic advice to the San Antonio Balloon Race Committee, including therein full details of shipment, such as car numbers and how sent.

Balloons will be inflated at Kelly Field.

Entries

Entries for the Balloon Race shall be made, in accordance with the rules of the F.A.I., to the Race Executive, Lt. Col. C. C. Culver, Air Officer, Fort Sam Houston, Tex.

Entries will be enrolled in the order of their receipt up to 3.00 o'clock, March 15, at which hour free entries will be closed. Entries received between March 15 and 3.00 o'clock March 29 will be penalized 50 per cent of their entry fee. Entries received after March 29 will only be accepted with the written consent of all other entrants, the approval of the Race Committee, and upon forfeiture of entry fees.

Each entry shall be accompanied by an entrance fee of $50.00. This entrance fee will be returned in whole or in part: (a) To contestants ready to start in the race (with the exceptions above noted); (b) To contestants who have been declared not admissable; (c) To the contestant whose entry has been eliminated by the drawing of lots or by reason of other enrollment.

Each request for entry shall also be accompanied by a certified description of the entrant's balloon; that is, dimensions of envelope, cubic capacity and how calculated, fabric, type and size of valve.

Number of Entrants

The number of entrants is limited to ten and selection will be made in order of entries received. The number of entries may be increased to not more than fourteen if, in the opinion of the Race Committee, the number of entrants and the preparation for properly inflating the balloons warrant such increase, and if the recommendation of the Race Committee for such increase is approved by the Contest Committee of the National Aeronautic Association.

The minimum number of balloons entered shall be five. The entrance fee will be forfeited by any contestant whose entry has been accepted and who fails to be ready for the start. It may also be declared forfeited by the Referee or Race Committee for violation of rules.

The designated time for the start of the race will be 4 p. m., April 23, 1924. The hour of the start may be changed by the Race Committee at the request of a majority of the contestants.

The Race Committee reserves the right to postpone the start of the race to a later hour or date in case of adverse weather conditions or possible hold up due to the partial inflation with hydrogen gas.

Special Equipment

All contestants must have, in addition to their regular flying equipment, the following:

(a) 50 ft. of cloth inflating pipe with connecting sleeve.
(b) 100 ballast bags for inflation.
(c) Ground cloth.
(d) A recording altimeter (barograph) which shall be sealed under direction of the Referee.

Contestants will be supplied with the "Ascension Record," "Log of Flight," "Report of Final Landing," "Landing Certificate," and "Balloon Messages," gratis.

Hydrogen and natural gas will be supplied gratis to contestants. The Race Committee reserves the right to determine the quality and mixture of gas. The Race Committee will have special hydrogen detail under a competent officer to supervise the inflation of each balloon with its part of hydrogen. Equipment for this part of the inflation will be furnished by the Race Committee. Crews will also be furnished to contestants to carry on the regular inflation with natural gas.

F.A.I. Rules in Force

The name of each balloon or club must be displayed on the balloon.

All pilots must be holders of an F.A.I. certificate and, in addition, the annual license as issued by the Contest Committee of the National Aeronautic Association.

Sand ballast for each contestant will be provided by the Race Committee.

The attendance of contestants is particularly called to Arts. 7, 25, 26, 27, 89, 122, 127, 129, 130, 132, 136, 139 and 140 of the F.A.I. General Regulations.

Any contestant who descends into the sea and is obliged to have recourse to a boat in any manner whatever, is out of the race without other penalty.

A balloon must land with the same number of passengers it ascended with.

A pilot landing without his basket is disqualified without other penalty.

Categories Admitted

According to the F.A.I. Regulations, the three categories of balloons admitted in the National Balloon Race have the following allowable capacities:

3rd category—901 to 1200 cu. m. (31,818 to 42,377 cu. ft.)
4th category—1201 to 1600 cu. m. (42,412 to 56,502 cu. ft.)
5th category—1601 to 2200 cu. m. (56,538 to 77,691 cu. ft.)

A variation of 5 per cent is allowed; consequently there can be considered as belonging to a given category, balloons exceeding by 5 per cent the maximum, or falling below by 5 per cent the minimum volume of that category. In these cases the competitor will be allowed to choose in which of the two categories he wishes to compete.

Small Italian Airship

The Italian Government airship factory at Vigna di Valle, near Rome, has under construction a new type semi-rigid airship called MR. Its capacity will be 35,000 cu. ft. and its length 100 ft. The engine will be an Anzani 45 hp.

The Curtiss Exhibition Company in 1923

By C. S. JONES

Manager, Curtiss Exhibition Company

The Curtiss Exhibition Co., of Garden City, N. Y., which handles the flying for the Curtiss Aeroplane and Motor Co., Inc., has had an interesting and successful year in its commercial flying during 1923.

Operating nine Orioles, three C6 Standards, and six JN's, the company flew something over 1400 hr. in 1923, covering approximately 125,000 mi. Ninety-two per cent of this was paid commercial flying. It is interesting to note the division and percentage of the various types of work.

Instruction	20 per cent
Aerial Photography	21 " "
Passenger Carrying	10 " "
Tests and Student Solo	4 " "
Special work (moving picture contracts, transportation of films and pictures, etc.)	45 " "

One of the C6 Oriole three-seaters operated by the Curtiss Exhibition Co.

New Flight Training Plan

Considerable enthusiasm was displayed toward the new plan offered by the company for training students. A careful study of conditions showed that the principal trouble with instruction, as given since the war, has been that though a student could learn to fly, unless he could finance the purchase of a plane upon completion of his course, he was left without any means of continuing his flying without exorbitant cost. This meant that the average young man who wished to follow up aviation could not afford to do so.

The Curtiss Exhibition Co., having on hand a surplus of JNs, conceived the idea of presenting their graduates with a JN, less motor, together with a flying course. Government sales of OX motors reduced the prices to reasonable figures so that the student, at a relatively small cost, could learn to fly and owned a machine on which he could continue to perfect himself and at the same time earn some money by passenger carrying, aerial photography, etc. Thirty students were trained at the school at Garden City, in addition to those trained at Buffalo, N. Y., and Dallas, Tex., under this regular course. Seven more were given instruction in flying only. Thirteen Curtiss employees were soloed under special arrangement for these men.

When a student enrolled in the school he was assigned a machine and he, under the direction of an instructor, supplied the labor for setting and lining it up. Furthermore, he had to install the motor and this gave him a very practical course in construction and maintenance. Other courses were given in cross country flying, navigation, etc., so as to round out the student's knowledge and prepare him in the fundamentals as far as was possible in the period of two months.

The principal difficulty encountered was the fact that students, upon completing their courses, were too anxious to get back to their own homes to start operations and in several cases students started away on long cross country flights before they had had proper experience. Several crashes of minor nature resulted. This led to the institution of a policy of attempting to get the student to spend an extra month at the field in which period he was encouraged to make cross country flights, so that gradually he became experienced enough to be able to fly his machine home. In case a student did not feel that he could spend this extra month, an instructor was sent with him to insure his arrival at his destination and the cross country experience obtained in this manner was of extreme value.

Aerial Photographic Work

While the company does not attempt to compete with the aerial photographic companies in the actual taking of pictures, it did handle the majority of the flying in the vicinity of New York for the larger companies, namely, Fairchild Aerial Camera Corp., Hamilton Maxwell, Inc. and Underwood & Underwood. In the case of the Fairchild Company, which maintains its own flying organization, the ships were leased and the flying was done by Fairchild pilots with some help from the Curtiss pilots. During this period the Fairchild Company made a map of the five boroughs of New York, the largest aerial map ever attempted, and as reported by city officials, of extreme value to the city. Maps were also made of various railroads, power lines, etc., as well as numerous oblique pictures of cities within a radius of 400 mi. One remarkable job was done for Barron G. Collier in Florida, 90 per cent of the work being over the Everglades and impossible to obtain by any other means.

Short rides comprised the bulk of the passenger work in Garden City where the demonstrations in parachute dropping, races, etc., attracted large crowds, especially on Sundays. There was a considerable amount of so-called "taxi" work to points within a radius of 400 mi. of New York. A special

excursion over New York, covering the north shore of Long Island, the entire city of New York, Coney Island, the Rockaways, and Long Beach, consisting of about an hour's flying, was extremely popular.

A good many former students and ex-pilots, availing themselves of the opportunity to keep their "hand in," took advantage of special rates offered to this class of men for use of company machines. In these cases, after the pilot had proved himself capable of handling the machine by demonstration to test pilot, he was allowed to fly within certain limits and the company assumed responsibility of damage to machines.

As mentioned above, 45 per cent of the business consisted of special jobs. In March two complete machines were shipped to the heart of the Canadian Rockies, Lake Windemere, for the filming of a picture by Cosmopolitan Productions, Inc. This picture, "Unseeing Eyes," starring Lionel Barrymore and Miss Seena Owen, was produced at the Cosmopolitan and later the Capitol Theatre in New York and is now released throughout the country. The only available landing field was the frozen surface of Lake Windemere, 3200 ft. above sea level, and practically all the picture was taken around the snow covered peaks at an altitude around 11,000 ft. Close-up action was combined with wonderful scenic effect by mounting a motor driven camera on the struts of the plane so that the actors were able to go through their various scenes directly in front of the camera and before a wonderful and unsurpassed background. In their criticisms of the film most of the New York critics agreed that the scenic photography surpassed anything before taken. The company also furnished flying for various other productions, the most notable perhaps being the "Green Goddess" with George Arliss in the leading role.

Transporting Films and Pictures

In the transportation of films and newspaper pictures the company made great strides. Working under contract for the Newspaper Enterprise Association of Cleveland they supplied a complete airplane service covering the Dempsey-Gibbons fight at Shelby, Mont., on July 4. This necessitated a flying base at Shelby. The following cities were reached by plane within 48 hr. after the fight. One machine left Shelby going West, covering Spokane and Seattle, Washington, and Portland, Ore. From Portland another plane went South to San Francisco and from there to Los Angeles. A second plane left Shelby for Salt Lake City where connections were made East and West with the air mail leaving the following morning. From Salt Lake City another plane went forward to Los Angeles so as to make doubly sure the delivery of pictures at this point. Two planes came East, making the first stop at Williston, N. D., at 11 p. m., where the undeveloped plates were printed during the night and rushed by special train to Fargo, N. D., where a plane was waiting to convey them East to Minneapolis and Chicago. Other planes brought them East, covering Cleveland, Cincinnati, Pittsburgh, New York, Boston, Baltimore and Washington. Meantime one of the planes at Williston left before daybreak, taking the pictures to Omaha, Kansas City, and St. Louis. Thus practically the entire country was covered by airplane service which was especially notable because of the distance and the naturally poor facilities of Shelby.

The Curtiss Exhibition Co. also handled the distribution of pictures of the Dempsey-Firpo fight in New York. One plane left Van Cortland Park at midnight, making the flight over the Appalachian Mountains, and arriving at Cleveland before daybreak. From there it continued on to Chicago, arriving at 8:30 a. m., and at Omaha at 1 p. m. From there the plates were put on a special train which ran all night and before daybreak the following morning developed pictures were taken from this train at Cheyenne and flown over the Rockies to Salt Lake City and San Francisco where pictures of the knock-out were on the streets 40 hr. after the fight. To insure delivery of these pictures in case anything happened to the first plane, a follow up system was used and another plane with printed pictures left New York before daybreak the following morning and went as far as Chicago until it was certain that the first plane had arrived at Omaha. In both the above cases a complete scoop was scored by the papers using N.E.A. Service.

The morning following the fight, the pilot flying the mail from Cleveland to New York purchased a paper in Cleveland, showing the pictures of the fight and flew it back to New York, delivering it at the New York office of N.E.A. before noon. Thus, pictures taken in New York were developed, printed and published in Cleveland and delivered again in New York less than 14 hr. after the knock-out, quicker than the fastest train can make the trip in one direction.

At the time of the death of the late President Harding airplane service was furnished covering Washington, New York, Boston, Marion, Cleveland, and Chicago. Pictures and films of the Japanese earthquake were brought from the west coast to New York.

During the year contracts were made with the following companies for this kind of work: Newspaper Enterprise Association of Cleveland, International Newsreel of New York, Pathé News of New York, Pacific and Atlantic Photos of New York, Boston Post, New York Times, United Newsreel of New York, etc.

Scores in St. Louis Races

The company's entry in the International Races at St. Louis won the "On to St. Louis Race." This race was a handicap affair, points being awarded for miles traveled, flying time, number of passengers carried, and horsepower. The race was won by making the flight from New York to St. Louis, over 1000 mi., in 13 hr. with one passenger on 90 hp. This same machine took third place in the 90 hp. race and the Detroit Country Club event for light commercial planes. *

In addition to the work at Garden City, fields and schools were conducted at Dallas, Tex., and Buffalo, N. Y., and the water flying was handled at Port Washington, L. I., and Atlantic City, N. J., where three Curtiss Seagulls were used. These boats flew approximately 26,000 mi. Ninety-six per cent of this flying was sight-seeing trips up and down the ocean front. The company's register shows names from practically all countries of the world and from all walks of life, the laborer and the millionaire riding together in the same boat. During the beauty pageant one of the most sought after prizes was the rides given by the Curtiss Company.

The activities and flying were under the direction of C. S. Jones, manager of the company, assisted by R. K. Wheeler. The regular pilots were J. P. Andrews, William McMullen, J. G. Ray, E. P. Lott, and H. P. Pearson. On special jobs some of the Air Mail pilots were employed, notably W. L. Smith, who made the night flight from New York to Cleveland and continued from there to Omaha; and Kenneth Unger, who did some valuable work in flying over the Rockies.

Macready Fails to Break Sadi's Record

Lieut. John A. Macready, A.S., on Feb. 23 failed for the second time in his attempt to break the world's altitude record of 36,564 ft., made on Oct. 30, 1923, by Sadi Lecointe, the French flier. Intolerably cold weather combined with mechanical trouble forced Macready down when he reached an altitude of 34,983 ft. as shown by corrected barograph readings. His indicated altitude was 41,000 ft. Macready, after landing with a frozen face, said that he ran into a temperature of 75 deg. below zero, which froze up practically all the recording instruments on the plane. "Everything was going fine," said Macready, "and I was nearly at my ceiling, when the supercharger stopped working. I knew then that it was impossible to get any higher and went into a gradual dive after having been in the air about 1 hr. 45 min."

Macready's attempt was made at McCook Field. The plane used was the old Lepère on which he twice before established world's altitude records. The turbine supercharger was a new model produced by the General Electric Co. which is designed to feed sea level atmosphere to the engine up to a height of 35,000 ft. The recording instruments on the plane included a 50,000 ft. Pioneer altimeter.

The difference between the indicated and the F.A.I. readings of the barograph is due to the fact that the Air Service instruments are calibrated by the Bureau of Standards formula, which differs from that used by the F.A.I.

*The author's modesty causes him to suppress the fact that the Oriole entered in these two events was piloted by himself.—EDITOR.

AIRPORTS AND AIRWAYS

N. Y. State Air Navigation Bill

All civil aircraft in New York State will have to be registered and all their operations licensed after July 1, next. if a legislative bill introduced by Assemblyman Ricca of Brooklyn becomes law.

Trick or acrobatic flying over any thickly inhabited territory or over any public gathering is prohibited.

The Ricca bill makes the Motor Vehicle Bureau of the State Tax Department the agency through which licenses for aircraft and operations shall be obtained. The license fee is placed at $5. Examinations and tests of an applicant for an operating license would cost $20. The Tax Commission receives power to suspend or revoke any certificate of registration or operator's license after a hearing. This is a greater measure of authority than the commission can exercise in relation to operators of motor vehicles.

To operate an aircraft without a license if the Ricca bill becomes law, would be a misdemeanor punishable by a fine or imprisonment or both. The bill provides similar penalties for airmen who engage in dangerous feats or fly at such a low level as to endanger persons or property below, and for persons who while in flight over this State hunt birds or animals of any description. The fine is limited to a maximum of $100, while the longest prison term would be one year.

Flying without license is permitted where the pilot flies over land or water owned by him or over land or water owned by any other person from whom he has obtained permission. Exception is made for persons not resident of the State who "shall have complied with the aeronautic laws of the State in which he resides," for airmen in the United States service, or, within the discretion of the Tax Commission, for the operator of any transient aircraft operated by the resident of a State where no laws governing aeronautics have been enacted. It is provided, however, that such craft must not carry either passengers or freight while flying over this State. The period of grace during which outside aircraft may operate without a license is fixed at thirty days.

These provisions were not contained in the first aeronautic bill introduced last year. The Ricca bill repeats provisions contained in the bill of last year, which broadly define the principles of regulation.

Sovereignty in the air above lands and waters of this State is declared to rest in the State except where it is given over to the Federal Government through Constitutional grant by the people. The ownership of space in the air is declared to lodge in the owners of "the surface beneath," subject to the right of lawful flight.

Flight to be lawful must be at an altitude where it will not interfere with the "then existing use to which the land or water, or the space over the land or water, is put by the owner, or unless so conducted as to be imminently dangerous to persons or property lawfully on the land or water beneath."

Airmen are prohibited from descending, except by forced landings, on private property without the owner's consent. In case of forced landings they are responsible for any damage.

One clause in the bill provides that contracts entered into by airmen or passengers while in flight over the State shall have the same effect as if entered "into on the land or water beneath." Under this clause marriages contracted in the air during flight over this State would be valid and the parties subject to the laws of this State.

England and the Schneider Cup

According to L'Aéro-Sports, it is practically certain that Great Britain will not participate in this year's Schneider Cup race. Entries for this race close on April 1, next. The general conditions are the same as for last year.

Kansas City News

By T. S. Jewett, jr.

Due to a month of cold, ice and snow, the activities at Richards Field, Kansas City, Mo., for the month of January dropped way under the preceding one. The total man hours for the military were as follows: Reserve officers, 9 hr. 50 min.; Ft. Leavenworth officers, 2 hr. 50 min.; Officers assigned, 8 hr.; total aircraft hours, 10 hr. 40 min.

The commercial activities suffered the same, so most flights were confined to sightseeing trips around over the field and city. Tex LaGrone was brave enough to start out but was held up at Pitcher, Okla., which left Ben Gregory and B. M. Tuxhorn doing most of the passenger carrying on the few nice days we had.

Sam Fitzgerald has bought W. F. Spencer's JN4 and is going to operate from the field. K. N. Karshner has sold his Canuck to Kane who is a pupil of Tuxhorn.

The Flying Club of Kansas City, through the courtesy of the Kansas City Motor Car Dealers' Association, had charge of the combined aeronautical activities and exhibits at the Automotive Show held Feb. 9-16. These consisted of the latest in army and commercial airplanes and their equipment. There were statistics, charts, printed matter, and other publicity on air activities, both commercial and military, and the future development of the commercial aviation throughout the Southwest. Free moving pictures, made under the auspices of the War Department, about flying conditions, airplanes, their assembly, manufacture and equipment were also given.

Yackey Aircraft Had Good Year

The Yackey Aircraft Co. of Forest Park, Ill. reports that during 1923 it sold forty-seven airplanes, soloed 62 students, and was paid for 86,000 mi. cross country work. The firm has over fifty airplanes on hand, and is confidently looking forward to a good year's activity in 1924.

During the past year the Yackey company acquired the Chicago Air Park and the Ralph Diggins Flying School, thus adding materially to its flying equipment and operation facilities. Although some of the flying fields near Chicago were deserted during the cold wave, Yackey ships made flights almost every day of the month of January and soloed two students despite the Arctic conditions. The company has, for the past two years, always had at least two planes ready to go up on a half hour's notice.

Akron News

Two shop window displays, arranged by the Akron chapter of the National Aeronautic Association, recently attracted the attention of thousands of persons in Akron. Featured in each display was a model of the latest type of semi-rigid airships now being manufactured by Akron companies for the Army and Navy Air Services.

The exhibits were planned to direct attention of the public to the first aeronautical exposition held in connection with the tenth annual auto show at the Central garage.

In one window was shown a model of the D2 built by the Goodyear Tire & Rubber Co. for the U. S. Army Air Service. The other window contained a model of an Akron-built semi-rigid airship now used by the United States Navy.

Dixmude Memorial

In commemoration of the gallant crew of the French naval airship Dixmude which was lost with all on board in the Mediterranean Sea last December, a memorial will be erected at Pierrefeu, from where the ship started on her fateful flight.

Contributions may be addressed to the Comité du Monument aux Morts du Dixmude, Pierrefeu (Var), France.

Inter-American Air Relations

In connection with the editorial "The International Air Convention" which appeared in our last issue, AVIATION is advised by the Pan American Union that no action has yet been taken by its governing board in the matter of fixing the date of meeting or designating the city in which the Inter-American Commercial Aviation Commission shall hold its sessions. Nor have any of the interested governments appointed representatives on this Commission, which is to be established under a resolution adopted by the Fifth International Conference of American States held in Santiago, Chile, May 3, 1923.

The resolution reads as follows:

"The Fifth International Conference of American States resolves:

"1. To establish under the name of Inter-American Commercial Aviation Commission an inter-American technical commission to study the policy, laws, and regulations relating to commercial aviation, which shall be composed of not more than three Delegates from each State, member of the Pan American Union, and this Commission will meet at the time and place which the Governing Board of the Pan American Union may determine.

"2. The Inter-American Commercial Aviation Commission shall draft a bill of laws and regulations, the adoption of which is to be recommended to all the American States, with respect to commercial aviation, the determination of aerial routes, the establishment of special customs procedure for aviation, and the determination of adequate landing places; and it shall make recommendations with regard to the places at which said stations should be established.

"3. The meetings of the Inter-American Commercial Aviation Commission shall not last more than three months from the date of the first meeting. The conclusions at which it may arrive, shall be presented to the Governing Board of the Pan American Union.

"4. The Governing Board of the Pan American Union shall prepare in the form of a Convention or Conventions, the conclusions of the Inter-American Commercial Aviation Commission which may be suitable for inter-American agreements, and shall submit same to the consideration of the States belonging to the Pan American Union.

"5. The Inter-American Commercial Aviation Commission shall take into consideration in its deliberations the Conventions already existing, in order to take advantage of same in so far as possible, making the modifications demanded by the progress of commercial aviation, and the interests of the States belonging to the Pan American Union."

J. V. Martin Suit Struck from Records

Justice Frederick L. Siddons of the District Supreme Court in Washington on Feb. 4 granted a motion to strike from the records of the circuit court No. 1, the damage suit for $51,000,000 brought by Capt. James V. Martin of Garden City, L. I. against twenty-eight corporations and thirty-eight individuals concerned with aviation.

Captain Martin charged the defendants with having conspired to monopolize the aircraft industry, alleging they had slandered him, had made plans against his life, destroyed government reports commending him, etc.

The original action was begun some time ago and the petition since has been amended, but Justice Siddons still considers the declaration too vague and indefinite to meet the requirements of the law without regard to civil pleading. Accordingly, the original declaration and several amended declarations were stricken from the records.

Among the defendants named are the General Motor Corp., Packard Motor Car Co., Glenn L. Martin Co., Maj. Gen. Mason M. Patrick, Chief of Air Service; Howard E. Coffin, Rear Admiral William A. Moffett, Benedict Crowell, Wright Aeronautical Corp., Fisher Body Corp., Curtiss Aeroplane & Motor Co., Goodyear Tire & Rubber Co. and the Aeronautical Chamber of Commerce.

Wright Engines in Italy

The Italian air department has purchased, for experimental purposes, a Wright T3 and a Wright J1 radial engine.

Brig. Gen. C. S. Thomson, Secretary of State for Air in the new British Cabinet

Sale of Planes Halted

An injunction restraining M. Epstein of Norfolk, F. G. Erickson of Baltimore and Jack Elliott of Hamilton, Ont., from disposing of sixty-five seaplanes purchased from the Navy was obtained on Feb. 16 in Federal court at Norfolk, Va. by United States District Attorney Paul W. Kear.

It is charged by the District Attorney that the respondents sold, or agreed to sell a number of seaplanes, bought by Epstein at public auction at Hampton Roads naval supply station, to the Canadian government, in violation of conditions of the contract of sale.

The Hon. James Lyons, Minister of Lands and Forests for Ontario, when informed of the injunction, declared that Mr. Elliott's contract was cancelled prior to the injunction.

"Some time ago," Mr. Lyons said, "we called for tenders for thirteen seaplanes for fire patrolling and timber cruising, and the tender of Jack V. Elliott, Ltd., of Hamilton, was accepted. Elliott, whom I had never met until the other day, was intending to obtain these United States Navy machines, but after taking the matter up with Washington I learned that he could not get them, so I cancelled our contract with him."

Death of Dr. Bendemann

Dr. Friedrich Bendemann, one of the foremost aerodynamicists in the world, died in Germany on Dec. 31 last. The deceased, at the time of his death, was attached to the German Air Department in an advisory capacity.

Dr. Bendemann started his aerodynamical investigations in the early days of aviation at the aeronautical observatory in Lindenberg. In 1912 he was appointed chief of the German aerodynamical institute at Adlershof, where he conducted important research work concerning aircraft engines and propellers.

More British Aircraft Carriers

According to the *Morning Post* of London, the two British big-gun cruisers Glorious and Courageous, of 18,600 tons displacement each, will shortly be converted into aircraft carriers in the Devonport naval dockyard. The two vessels are sisterships of the aircraft carrier Furious.

Brazilian Air Force

The Brazilian air force is divided into two distinct branches, which are controlled by the army and navy, respectively. The army air service is French-trained and is almost exclusively equipped with French matériel. Bréguet planes are used for bombing and observation work, and Spad planes for pursuit work. The organization table for 1924 provides for one bombing group of three squadrons, stationed at Alegrete; one pursuit group of three squadrons; and six corps observation squadrons. The two principal aircraft depots are located at the Rio Grande do Sul, and the central flying school is at Rio de Janeiro. The average allowance per squadron is ten machines.

The naval air service is largely equipped with American aircraft and includes twelve F5Ls scouting seaplanes and twelve Curtiss N9 float planes for school work. For observation work fourteen Savoia flying boats, equipped with 300 hp. SPA engines, are available, in addition to an odd assortment of older French and British seaplanes. The central naval flying school is located on Governor's Island, in the Bay of Rio de Janeiro, but it will be moved to Santos, where an elaborate establishment is being built.

The Brazilian naval air service is being reorganized by Comdr. T. G. Ellyson, U.S.N., air member of the American Navy Mission in charge of Admiral C. T. Vogelsang, which went to Brazil in December, 1922.

New Dornier Plane

The Dornier Metallbauten company of Friedrichshafen, Germany, recently produced a small three-seater landplane with an 80 hp. Siemens radial air cooled motor which differs considerably from the other landplanes produced by this firm.

The Dornier Spatz, as the new ship is called, is an adaptation for land use of the Libelle three seater sport flying boat produced by the same constructor. The new ship looks like a flying boat on wheels, with the pilot and passenger sitting in a slightly raised cabin and the engine with a tractor propeller being carried in the center of the single raised wing.

Like all the other Dornier machines, the Spatz is almost entirely built of duralumin, steel being used only in the heavily stressed members.

The principal characteristics of this ship are: Span, 32 ft.; overall length, 23 ft.; weight empty, 980 lb.; weight loaded, 1584 lb.; maximum speed, 87 mi./hr.; cruising speed, 74 mi./hr.; ceiling, 11,500 ft.

German Light Plane Experiments

Arthur Martens, the well known German glider pilot, has lately been making experiments in the Rhoen hills with his glider Strolch fitted with a small auxiliary engine. The Strolch is a very efficient monoplane glider and may be regarded as a refinement of the famous Vampyr. The engine used in the experiments was a two cylinder horizontal opposed two stroke type of 300 cu. cm. capacity known as the Ilomotor. It is manufactured by the Norddeutsche Maschinenfabrik of Pinneberg, Holstein, and develops approximately five brake horsepower. The engine is so mounted in the machine that it can easily be removed, if it is desired to use the plane as a pure glider.

Although the Strolch flew quite well with this diminutive power plant, it seems to be somewhat underpowered and may be regarded as a glider fitted with an auxiliary engine rather than as a light plane.

International Air Transport

Arrangements for air lines running in conjunction throughout Europe during the present year were agreed to at the conference of the International Air Traffic Association, held at The Hague, Holland, late in January. Representatives of eight countries were present.

New Czechoslovakian Engine

The Walter company of Prague has recently produced a successful five-cylinder radial air-cooled engine which develops 60 hp. at 1400 r.p.m. and weighs 194 lb. The fuel consumption is 0.51 lb./hp. hr. The first of these engines has been bought by the Czechoslovakian air service.

The New British Air Secretaries

The following biographical notes are on hand regarding Brig.-Gen. Christopher Thomson, the new British Secretary of State for Air and President of the Air Council. General Thomson was born in 1875, the son of Maj.-Gen. David Thomson, and was commissioned in the Royal Engineers. He served in the Mashonaland and South African campaigns, passed through the Staff College, and was on the staff of the War Office from 1911-14. On the outbreak of war, he went to France on the staff of the First Army Corps under Sir Douglas Haig, and in 1915 became military attaché to Rumania and later head of the military commission there. He visited Russia both before and after the Kerensky revolution. Thereafter, he returned to active service and commanded the brigade of General Allenby's army which was the first to enter Jerusalem. From May, 1918, to July, 1919, he was at Versailles as British military representative on the Supreme War Council.

The Under Secretary of State for Air in the new British Cabinet is William Leach, worsted manufacturer, who has prominently been identified with the British Labor Party.

French Air Transport Competition

The general regulations for the air transport plane competition, which will take place this year some time in August, have just been made public. The competition is endowed by the French air department with one million francs of prizes, which will be apportioned as follows: 800,000 francs for performance; 125,000 francs for improvements in equipment; and 75,000 francs for organization purposes. The preliminary trials will consist of figure eight flights at Le Bourget, with each of the engines stopped in turn. The qualification trials will be held over a 1900 mi. circuit, between Paris and Bordeaux.

Contestants will be qualified in this race by the formula PV^3/W, in which P is the pay load, V the commercial speed, and W the horsepower. In other words, the French Air Department seeks to encourage machines with the highest ton mileage for a given fuel consumption.

An Interesting Prize

Michelin, the well known French tire manufacturer and patron of aeronautics, offered in 1922 a prize of half a million francs for the first airplane that would have a speed range of from 18 mi./hr. to 74 mi./hr. and land within a circle of 150 ft. diameter. The compulsory useful load is 275 lb., including the pilot.

This prize was put into competition in 1923, but as it was not won it has once more been offered to contestants. In view of the great difficulties which seem to be involved in the construction of such a machine, M. Michelin has offered in addition a prize of 30,000 francs for a preparatory contest of the same nature.

British Air Transport Subsidy

The one million pound subsidy scheme, under which the newly created Imperial Air Transport Company will operate under supervision of the British Air Ministry, will be spread in unequal instalments over a period of ten years. The subsidy will amount to £137,000 per year for the first four years, £112,000 the fifth year, £100,000 the sixth year, £86,000 the seventh year, £70,000 the eighth year, £52,000 the ninth year, and £32,000 the tenth year.

Italy in the Schneider Race

It is reported from Italy that three Italian manufacturers will compete for the honor of being represented on the Italian team which will challenge the United States for the Schneider Cup this year. These manufacturers are said to be Macchi, Savoia, and Piaggio, and it is believed that the Italian entries will be equipped with the new 450 hp. Fiat engine.

Autogyro Performs Again

The La Cierva Autogyro, a heavier-than-air craft with stub wings and a large rotating vane on a vertical shaft, which was described some time ago in AVIATION, recently made a flight of 3000 ft. length with a pilot and passenger at Cuatro-Vientos airdrome, in Spain.

Belgium has Strong Air Force

The Belgian army air service was very active during the past year, as may be seen from the fact that from Jan. 1 to Nov. 30, the total flying time of Belgian military planes was approximately 25,000 hr., representing a total distance of 2,000,000 mi. During this period 39 military and 29 civilian air pilots' certificates were delivered to students.

Under new organization tables now being prepared, the Belgian air force would constitute an air brigade of three regiments, each consisting of either two, three, or four groups. As now constituted, the Belgian air force comprises six squadrons of divisional aircraft, three observation squadrons, three pursuit squadrons, three bombing squadrons, three engineering squadrons, and three training squadrons, in addition to four balloon and airship squadrons.

It will be seen from these figures that Belgium, a country of 6,500,000 inhabitants, has 21 airplane squadrons, as against 34 of our own Army Air Service, which has a population of over 100,000,000 people and outlying possessions 4000 mi. from the continental United States to defend. The moral is obvious.

New Helicopter Record

A new duration record for helicopters was made on Jan. 16 when the Pescara helicopter, piloted by its inventor, remained aloft 8 min. 13 sec. The record was made in the course of an attempt for the first one kilometer circuit flight which has been endowed by the Aero Club of France with a prize of 10,000 francs.

M. Pescara has for some time been practising straight and circular flights with his machine, with a view to winning this prize. On Jan. 21 he covered a distance of 1800 ft. in 4 min. 21 sec. and on Jan. 29 he remained aloft 7 min. 54 sec. Observers state that the main trouble with the machine seems to be the pilot's lack of familiarity with its controls, rather than any inherent defect of the helicopter. M. Pescara is not a trained pilot and is teaching himself to fly on his helicopter.

New Italian Observation Seaplane

A new Italian observation seaplane of the flying boat type, which was built by the Savoia company, has successfully been tested before representatives of the Italian air department. The machine, known as type S57, with a useful load of 1100 lb. made a top speed of 135.8 mi./hr. and climbed 330 ft. in 4 min. 24 sec.; 6600 ft. in 9 min. 18 sec.; 10,000 ft. in 17 min.; 13,200 ft. in 29 min. 36 sec.; and 15,500 ft. in 48 min. The theoretical ceiling is 17,000 ft. At 13,000 ft., the speed of the machine was 120 mi./hr.

Inasmuch as the S57 was fitted with an Isotta Fraschini V6 260 hp. engine, which is practically obsolete, the constructors hope to better the performance considerably when the plane will have been fitted with an uptodate power plant.

Airship Station To Be Scrapped

The airship station at Howden, Yorkshire, England, which some American air officers will remember from the days of the war, is shortly to be demolished. All the buildings and machinery will be sold by auction. The buildings comprise one shed, 750 ft. long, one 700 ft. long, and two 325 ft. long. It is expected that the work of demolition will last at least a year.

As is known, the British government has stopped all its airship activities since a short time after the Armistice, as the Royal Air Force does not seem to see any military use for airships, and particularly those of the large rigid type.

Paris to New York Flight Attempt

A non-stop flight from Paris to New York is to be attempted during the coming summer with a monoplane designed by Louis de Monge, the French airplane constructor. This ship will have a single cantilever wing, measuring 100 ft. in span and 7 ft. at the wing roots, where it will accommodate the pilot, crew, and fuel supply. The power plant will consist of three 400 hp. Lorraine-Dietrich engines, and the speed is expected to be about 120 mi./hr. The landing gear will fold up into the machine when in flight.

British Reserve Training Schools

The British air department has made arrangements with four private firms for giving refresher courses to reserve officers of the Royal Air Force. These schools are located at the following places: Stag Lane, near London, operated by the de Haviland Co.; Coventry (Midlands Area), operated by Armstrong-Whitworth; Filton (Westlands Area), operated by the Bristol Aeroplane Co.; Brough-on-Humber, operated by the Blackburn Aeroplane & Motor Co., for airplane and seaplane pilots; Alexandra Park, near Manchester, operated by A. V. Roe & Co.; and Renfrew, near Glasgow, operated by the William Beardmore Co.

New Italian Aircraft Carrier

The first Italian aircraft carrier especially built for this purpose was recently launched in Spezia. This vessel, called the Miraglia, has a displacement of 4675 tons. Oil-burning engines, developing 12,000 hp., give it a speed of 22 knots. The ship is of the flush deck type, the take-off and landing platform extending from stem to stern. The ship will hold ten seaplanes assembled and ready for action, and additional planes dissembled in the holds. A complete workshop is also included in the equipment of the ship.

The Miraglia will be the first modern aircraft carrier of the Italian navy.

Aircraft Carriers for the French Navy

The question of aircraft carriers is receiving considerable attention in the French press. The point particularly discussed is whether it is preferable to have a combination type of aircraft carrier and light cruiser or an out-and-out type of aircraft carrier. Expert opinion is, as a rule, favorable to the first solution.

England to Ireland Air Service

As a result of experiments conducted by the British Air Ministry last year, in which mails were carried by air between Plymouth, Manchester and Belfast, it is understood that the De Haviland Aircraft Company will shortly operate a daily air service between Manchester and Belfast for passengers and merchandise. The planes used in this service will be the DH50 type.

Aero Club Jubilee

The Aero Club of France recently celebrated the twenty-fifth anniversary of its foundation with a banquet which 600 guests, including many notable personalities of the aviation world, attended. Among the guests of honor were Marshal Foch, Generals Gouraud, Dumesnil and Hirschauer, and three Ministers representing the French government.

Esthonia Fosters Air Transport

The 1924 budget of Esthonia contains an appropriation of 10,000,000 Esthonian marks as a subsidy to the "Aeronaut" company. This concern has a monopoly of air traffic in Esthonia and undertakes to organize whatever air lines are required by the Ministry of Communications. At present, it is operating the Revel-Riga and Revel-Helsingfors line.

Swiss Entries for Gordon Bennett Race

The Aero Club of Switzerland has decided to enter two balloons in the forthcoming Gordon Bennett International Balloon Race, which will be held June 15 next at Brussels, Belgium. The pilots-designate of the Swiss balloons will be Captains Armbruster and Ansernier.

New Altitude Record

A new altitude record for weight-carrying was made Jan. 24 by the Russian aviator, Otto Ballod, at El Palomar, near Buenos Aires, Argentine, when he reached an altitude of 6485 m. with a useful load of 500 kg. The plane was a Fokker C4, equipped with a Napier-Lion 450 hp. engine.

First Polish Seaplane

The first seaplane built in Poland was recently produced by the Polish naval aircraft factory for the Polish naval air service. The plane, which is of the Macchi type, was built under license agreement with the Italian firm. The plane is equipped with a Fiat A12 bis engine.

UNITED STATES AIR FORCES

U. S. ARMY AIR SERVICE

Army Orders

First Lieut. Mark H. Redman, A.S., McCook Field, to A.S., Philippine Department, Manila, transports leaving New York and San Francisco April 16 and May 5, respectively.

Sec. Lieut. Elbert Kelly relieved 20th Inf., Fort Sam Houston, March 1, and detailed A.S., Primary Flying School, Brooks Field, for training.

First Lieut. Thomas Brooks, A.S., Mitchel Field, from temporary to permanent duty, Brooks Field.

Twenty-eight days' leave to Sec. Lieut. Cornelius E. O'Connor, to A.S., effective June 17.

First Lieut. Earl S. Schofield, A.S., from training Balloon and Airship School, Scott Field, to duty, that station.

Leave granted Lieut. Col. Charles H. Danforth, A. S., extended ten days.

Lieut. F. O. Hunter Leaves Hospital

Lieut. Frank Hunter, A.S., whose back was broken when his airplane crashed near Chaffee on Nov. 12, left the Grand Hospital at Buffalo, N. Y. on Feb. 14 for the Walter Reed Hospital in Washington. Although his back is still in a cast he is able to walk some without the aid of crutches. He probably will be under hospital care for another three months when he expects to enter active service again.

Lieutenant Hunter, with Captain Skeel and Lieutenant Matthews, flew to Mitchell Field on Nov. 10 and took part in the air circus for the benefit of the Army Relief Society. On his return trip to Detroit the engines of both airplanes developed trouble and in attempting a landing Lieutenant Hunter's airplane crashed. Captain Skeel made a safe landing.

Lieutenant Hunter is credited with having brought down eight German airplanes. He has been decorated with the Distinguished Service Cross and the Croix de Guerre with several palms. He is a native of Savannah, Ga. He was in France from October, 1917, until March, 1919.

(c) Keystone View Co.

The Army Air Service's World fliers, headed by General Patrick, call on President Coolidge, who wished them good luck on their world circling attempt—(L. to R.:) Sergts. A. L. Harvey, H. H. Ogden and A. G. Turner; Lieut. L. D. Schulze, General Patrick, Lieuts. L. H. Smith, L. P. Arnold, Eric Nelson and L. L. Wade

Capt. Willis H. Hale, A.S. (Inf.), Advanced Flying School, Kelly Field, to Langley Field, after leave granted.

Sec. Lieut. Charles D. McAllister, 10th F.A., Camp Lewis, to A.S., Primary Flying School, Brooks Field, for training from March 1.

First Lieut. Silas C. Hyndshaw, A.S., Mitchel Field, to A.S., Panama Canal Department, transport sailing New York April 16.

Orders Dec. 12, assigning First Lieut. William N. Amis, A.S., to duty Kelly Field, revoked.

First Lieut. Delmar H. Dunton, A.S., Kelly Field, to A.S., Philippine Department, Manila, transport sailing San Francisco May 5.

Resignation Sec. Lieut. Carlyle West Graybeal, A.S., on arrival in U.S., accepted.

First Lieut. Clarence R. MacIver, A.S., instructor N.G., St. Paul, Minn., to A.S., Philippine Department, Manila, transport sailing San Francisco May 5.

First Lieut. James G. Taylor, A.S., Brooks Field, to A.S., Philippine Department, Manila, after month's leave from June 16, transport sailing San Francisco July 19.

First Lieut. Robert S. Moore and Sec. Lieuts. Charles F. Beattie and Robert W. Douglass, jr., 29th Inf., Fort Benning, to A.S., Primary Flying School, Brooks Field, for training, effective March 1.

First Lieut. Archie B. Whitlow, 20th Inf., Fort Sam Houston, to A.S., Primary Flying School, Brooks Field, for training, effective March 1.

New Squadron Insignia

The 66th Service Squadron insignia, Camp Nichols, Rizal, P. I., which was designed by 1st Lt. A. W. Vanaman, A.S., has recently been completed and submitted. This insignia, which will as soon as practicable be placed on all planes assigned to this organization, is composed of an outer circle of gold, with a white center and displaying four small gears operating off a larger one. The latter represents a service squadron, the four smaller ones an attack, pursuit, bombardment and observation squadron, respectively.

Mechanics Chosen for World Flight

The following aviation mechanicians have been tentatively selected for the Round-the-World Flight, to start from Los Angeles March 15. They have been ordered to report immediately to Langley Field, Va., for intensified training for their respective duties:

Tech. Sergt. Arthur H. Turner, of the 91st Observation Squadron at Crissy Field, Calif.

Staff Sergt. Henry H. Ogden, 57th Service Squadron, Selfridge Field, Mich.

Staff Sergt. Alva L. Harvey of the Air Service Technical School, Chanute Field, Ill.

Staff Sergt. Abraham L. Heiney of the 99th Observation Squadron, Bolling Field, D. C.

Four other mechanics will soon be designated for the same training. From the eight, four will be chosen to accompany and care for the four planes, the remaining four being held available as alternates in case of sickness or accident.

The four airplanes of the expedition will be named for American cities of which selection has not yet been made.

Obituary Notices

ELLIS DEV. WILLIS—Born in Iowa, Jan. 21, 1896. 2nd Lieutenant of Inf., Oct. 26, 1917; 1st lieutenant (temp.), June 12, 1918; 1st Lieutenant, Aug. 28, 1919; Captain, Aug. 2, 1921; hon. discharged as Captain and appointed 1st Lieutenant Nov. 18, 1922; graduate Air Service Pilots School and Air Service Bombardment School, 1921.

He was on duty with 36th Infantry at Fort Snelling, Minn., from Dec. 15, 1917, to Aug. 11, 1918; at Camp Devens, Mass., to May 27, 1919; en route to and on duty in Germany and returning to the United States to Jan. 23, 1921; at Carlstrom Field, Fla. to Aug. 22, 1921; at Kelly Field, Tex., to Dec. 14, 1923, when he was killed in an airplane accident.

GEORGE G. RUSK— Born in Indiana, Feb. 22, 1898. Cadet, Military Academy, July 11, 1919; 2nd Lieut., A.S. June 12, 1923.

He was attached to Headquarters Detachment, 11th School Group, A.S., Brooks Field, Tex., and served from Sept. 14, 1923 to Jan. 26, 1924, when he died near Brooks Field, Tex.

Changes of Status and Station

The following changes of status and station of non-commissioned officers of the Air Service have been reported recently:

Tech. Sergt. Charles W. Stolze, Middletown Air Intermediate Depot, Middletown, Pa., appointed a master sergeant Jan. 7.; Master Sergt. Clyde M. Strosneder, Langley Field, Hampton, Va., ordered to Panama Canal Department; Staff Sergt. John W. White, Mitchel Field, N. Y., appointed a technical sergeant, Air Service, and ordered to the Philippines; Staff Sergts. Eugene H. Duffin and James H. Crawley, A.S., Langley Field, reappointed to their former grade, technical sergeant, and ordered to Kelly Field by airplane.

New Reserve Corps Officers

Twenty-six flying cadets, who have completed flying training at the Air Service Advanced Flying School, Kelly Field, San Antonio, have been recommended for appointment as second lieutenants, Air Service, Officers' Reserve Corps. When these flying cadets have been commissioned in the Reserve Corps, they will be duly rated as airplane pilots.

U. S. NAVAL AVIATION

Aircraft Squadrons in Fleet Maneuvers

The Aircraft Squadrons of the Battle and Scouting Fleets, and the Aviation Division of the Marine Corps Expeditionary Force are busily engaged in the combined maneuvers of the Fleet.

The Aircraft Squadrons Battle Fleet left the Naval Air Station at Coco Solo on Jan. 25 for Culebra, Porto Rico, where the other aviation organizations are based. Before leaving the Canal Zone the Squadrons participated in the operations incident to the passage of the Battle Fleet from the Pacific to the Atlantic side of the Canal. A daylight to dark patrol was maintained from Jan. 14 to 18 to insure the safe passage of the Fleet through the Canal. This work was done in conjunction with the aircraft organizations of the Army in the Canal Zone, and excellent cooperation was obtained at all times. A total of forty-five Navy planes took part in these operations. The U.S.S. Aroostook and Gannet are with the Aircraft Squadrons Battle Fleet as tenders.

The Aircraft Squadrons Scouting Fleet arrived at Culebra, Porto Rico, on Jan. 29 and 30, accompanied by the U.S.S. Wright, Shawmut, Sandpiper and Teal as tenders. The organization, consisting of a total of twenty-seven planes flew the entire distance from Hampton Roads to Porto Rico, about 2200 mi., with only one plane failing to make the entire flight.

One plane, because of damage sustained in a forced landing was taken on board the U.S.S. Teal at Charleston, S. C., and was carried by that ship on her way South. The squadrons took part in the defense of Culebra against the attack of the Fleet.

The U.S.S. Langley, aircraft carrier, arrived at Chiriqui Lagoon, Costa Rica, on Jan. 11. Upon arrival four DT2 torpedo and bombing planes were hoisted overboard and found ready for use in the Fleet maneuvers. In the maneuvers incident to the approach of the Fleet to Culebra, P. R., the fighting planes of the Langley took to the air to attack the two squadrons of F5L's that came to oppose them. The fighting planes harassed the F5L's, attacking any plane that broke its formation. The Langley has had planes in the air for a very considerable part of the time since her arrival in the Carribean.

The Marine Corps planes took a very active part in the defense of Culebra against the Fleet. The activities of the planes consisted in making reconnaissance flights when the Fleet was approaching and observation flights after the arrival of the Fleet in the vicinity of their objective. Bombing flights were made before the arrival of the Fleet over the nearby islands, and all possible landing fields were "bombed" so as to prevent the planes of the attacking Fleet from affecting landings in the vicinity of Culebra. During the actual attack of the Fleet the planes of the Marine Corps Force launched a torpedo attack against the aircraft carrier Langley, and the transport Henderson was reported "sunk" by bombing and torpedoes. The attempts of the enemy force to land on the island (Porto Rico) were observed by the planes, which cooperated with the defending troops in their efforts to dislodge them. Radio communication between the planes and the ground forces was maintained very successfully during the entire operations.

Naval Orders

Lt. Comdr. Ezra G. Allen, det. Bu. Navigation to Bu. Aeronautics.

Lt. George F. Chapline, upon discharge treat. Nav. Hosp. Boston to temp. duty Nav. Aircraft Factory, Philadelphia.

Lt. Maurice Joses, (MC) det. U.S.S. Patoka, to U.S.S. Pyro.

Lt. John Law, det. U.S.S. Proteus, to U.S.S. Patoka.

Lt. Ralph N. Ofstie, det. VF Squad. 1, to Bu. Aeronautics, orders 1-14-24 to similar duty cancelled.

Lt. Spencer H. Warner, det. Nav. Air Sta. Anacostia, D. C., to Bu. Aeronautics.

Lt. (jg) Carlton D. Palmer, det. Nav. Air Sta. Anacostia, D. C., to U.S.S. Shenandoah and addl. duty Nav. Air Sta. Lakehurst.

Mach. Thomas H. Cormack, det. U.S.S. Wright to U.S.S. Seattle.

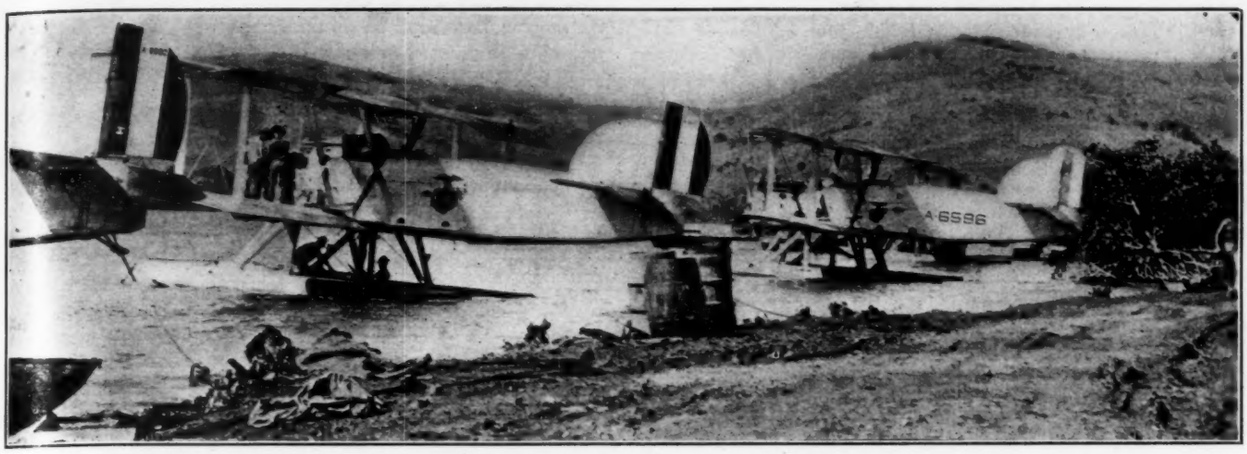
Mach. Uriel H. Leach, det. Nav. Air Sta. Hampton Roads, to U.S.S. Melville.

Pay. Clk. Anthony J. E. Charbonneau, det. Nav. Op. Base Key West, to U.S.S. Aroostook.

Pay Clk. John G. Gruebele, det. Nav. Op. Base San Diego, to Nav. Air Sta. San Diego.

Japanese Admiral and Staff Visit Hampton Roads

Four Japanese Naval Officers visited the Naval Air Station at Hampton Roads on Jan. 31. They were taken around the station on an inspection tour by the commanding officer. The visitors were Vice Admiral K. Ide, Capt. I. Yamamoto, Capt. K. Haseawa and Lt. Comdr. K. Yukishita.



The flying Marines in the West Indies—Marine Corps seaplanes, DT type, on the beach at Culebra Island, Porto Rico, where the Marine Expeditionary Force is engaging in winter maneuvers with the United States Fleet

Assistance to British World Fliers

The Secretary of the Navy has addressed the following letter of introduction to the Naval Air Service for the use of Lt. Col. L. E. Broome, late of the Royal Engineers, and his associates:

"To the United States Naval Service: 7 February, 1924.

"This will introduce to you Lt. Col. L. E. Broome, late of the Royal Engineers, who is making preparations for a flight around the world to be attempted this summer by Squadron Leader MacLaren of the British Royal Air Force.

"The British government is taking a great interest in the progress of this attempt and it is the desire of the department to cooperate in every way possible. Accordingly, it is requested that there be extended to Lt. Colonel Broome, Squadron Leader MacLaren and others who are participating with them in preparation for the flight and the flight itself every courtesy and assistance possible consistent with the public interests. They have the best wishes of the department and of myself personally for complete success in their undertaking.

"I desire to impress upon every officer and man in the U. S. Naval Service the keen desire of the department to render the fullest assistance and cooperation to those participating in this flight."

EDWIN DENBY

Airship C7 Deflated

The nonrigid airship C7 has made its last flight. Orders for her deflation have recently been sent by the Bureau of Aeronautics to the Naval Air Station at Hampton Roads.

In commenting on the discontinuance of the use of this airship, a report from that station says: "It would seem that this marks the passing of a ship that could be called a pioneer in lighter-than-air aviation. The most eventful day in the life of this ship was undoubtedly a cold December day in 1921 when she became the first airship in the world to successfully fly inflated with helium. After proving to the world the practicability of helium, the C7 was used in making important pressure distribution tests. These tests were only lately completed."

The lighter-than-air division of the station has been testing automatic and maneuvering valves such as are used on the airship Shenandoah. A free balloon was used in the tests for the purpose of ascertaining the rate of discharge of gas by the valves at different pressures and different periods of time.

Class XIX at Pensacola Completes Training

Class XIX, for Naval Aviators, composed of twenty-eight Naval officers and three Marine officers, completed their training about Feb. 15, according to word received from the Naval Air Station at Pensacola. Upon graduation as Naval Aviators, eighteen of these Naval officers will continue training as spotting plane pilots and ten as torpedo plane pilots.

New Executives at Lakehurst

Lt. Comdr. Jacob H. Klein, jr., U.S.N. on Feb. 16 took over command of the naval air station at Lakehurst, N. J., relieving Capt. F. R. McCrary, who had been in command of both the air station and the Shenandoah. The airship was taken in charge at the same time by Lt. Comdr. Zachary Lansdowne. Lt. Comdr. Maurice R. Pearce succeeded Commander Klein as Executive Officer of the station.

The transfers of command were made by the reading of orders from Washington to an assembly of the personnel of the station. Captain McCrary made a speech, thanking the officers and men for their cooperation.

Commander Klein made a speech, in which he said that hereafter no information would be given out for publication except through Commander Lansdowne or himself.

CALENDAR OF AERONAUTICAL EVENTS

March 7-8.	Curtiss Marine Flying Trophy Race and Flying Meet, Miami, Fla.
March 15.	Start of World Flight of the U. S. Army Air Service, Los Angeles.
March 31.	Closing date for papers submitted to Royal Aeronautical Society of Great Britain for the R38 Memorial Prize.
April 23.	National Balloon Race, San Antonio, Tex.
June 3-11.	International Aircraft Expositon, Prague, Czechoslovakia.
June 15.	Gordon Bennett International Balloon Race, Brussels, Belgium.
June 21.	Annual F.A.I. Conference, Paris, France.
June 22.	Commodore Beaumont International Cup Race for high speed airplanes, Istres, France.
July 5-6.	Zenith International Airplane Efficiency Race, Paris, France.
August.	"Tour de France des Avionnettes." International Round-France race for light airplanes.
Oct. 2-4.	International Air Races, incl. Pulitzer Trophy Race, Dayton, Ohio.
Oct. 24-25.	Schneider Cup Race, Baltimore.
Dec. 17.	Twenty-first anniversary of the first successful airplane flight.

Admiral Moffett Thanks Air Mail

The following is quoted from a letter from Admiral Moffett to the Postmaster General, thanking him for the services rendered by the Air Mail Service to Lieuts. B. H. Wyatt and J. D. Price on their trans-continental flight the latter part of December.

"The Chief of the Bureau of Aeronautics desires to thank the Superintendent of the Air Mail Service for the valuable services rendered to Lieut. J. D. Price and Lieut. B. H. Wyatt, U. S. Navy, during their recent cross country flight from San Diego to Washington. The following remarks are taken from the report of Lieutenant Wyatt on the termination of the flight:

"The Air Mail Service more than lived up to their established reputation for service and exceeded all our hopes in the servicing and repair of planes. At Cheyenne every possible courtesy and service was afforded us. When leaving on Sunday (the only holiday of the Air Mail Service) Chief Mechanic Force canceled a hunting party and came out at daybreak to get us started. At Iowa City, Superintendent Long came out to our plane with a truck and a party of men, and spent most of the morning helping us out of a corn field."

Planes in the South Seas

A very modern send off 50 mi. at sea was given to the pilot and sole occupant of a 24 ft. boat sailing from Honolulu to Palestine by a plane of the Naval Air Station at Pearl Harbor, Hawaii.

On Wednesday, Jan. 9, an American, named Sparks, set out from Honolulu for the Holy Land in his diminutive craft. The next morning a station plane flew out with a camera and obtained pictures of him, then about 50 mi. at sea. These pictures were published in the morning paper. On the afternoon of the same day another station plane flew out to him and dropped a morning paper and copies of his pictures to him.

Fort Hamilton Air Station

The City of New York will cooperate with the personnel of the Naval Reserve Air Station at Fort Hamilton, Brooklyn, in making repairs and improvements at that station. Officials of the New York City Police Department visited the station during the week of Jan. 26 to make arrangements for the work to be done, which will include repairs to the hangars and the laying of a concrete roadway.

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Publisher's News Letter

The prospect of another Congressional enquiry into the present and past activities of our Air Services seems to be nearer than generally supposed. When Congressman Nelson of Wisconsin introduced his resolution with comment obviously based on hearsay it was supposed that this was but another of the many attempts that have been made by a group of disappointed inventors to give further publicity to their grievances. But, inasmuch as these insinuations and charges will continue to be made until some such investigation is held, and as all those attacked have welcomed the opportunity of a hearing, the resolution may pass the House of Representatives and then the facts will come out.

* * * *

On the surface the investigation has mainly to do with the contractual and patent relations of the Army and Navy Air Services. It is claimed that favoritism has been shown, and the impression created that our aircraft manufacturers are the recipients of high prices and large orders. If the committee will only show that almost all the aircraft companies are without orders at all, while one or two are struggling with reconditioning jobs and that the entire production of American aircraft factories will probably be less than fifty new service type airplanes for the fiscal year, it will have done a real service. It is the general impression that conditions could not be worse—so let the truth prevail.

* * * *

What the committee could also do, with great profit to the government, is to turn its light on the four government factories where aircraft are now being built. The Naval Aircraft Factories at Philadelphia and at Pensacola, and the Army Air Service factories at McCook Field and at Fairfield, employ between themselves four complete engineering and manufacturing staffs that far outnumber the workmen in the private plants. In England government competition of this kind was stopped by the simple method of cost accounting. Here, the same procedure might be conducive to less government activity of this kind. In any event it would probably be found that the aircraft manufacturing facilities of the government might, with much economy, be concentrated in one place. Then at least it could be under closer observation than it is now.

* * * *

As Congressman Nelson went out of his way to criticize the aeronautical press, this phase of the enquiry would interest us greatly. An enquiry into the methods of establishing *U. S. Air Services* and its varied career would probably be an unpleasant subject for the officers of the Army and Navy Air Service Association. There is at present one investigation going on in this direction of which our readers may hear more before long. Fair competition is an excellent stimulus for any business, publishing or otherwise, but when improper means are employed, the beneficial processes of illumination are usually effective.

* * * *

The news that the Shenandoah is to be used in connection with fleet maneuvers as soon as she is again in commission shows that the Bureau of Aeronautics of the Navy, now that the North Pole excitement is over, is going to give the airship a practical test of utility. There has always been a confident opinion expressed by airship constructors that the airship has marked advantages over the airplane in fleet operations. Inasmuch as the "reparations" airship ZR3 cannot be used for such work, it is of the greatest importance that all the information of a naval kind that is possible to secure be ascertained from trips of the Shenandoah. Everyone will watch with the greatest interest the sea trips of the big airship.

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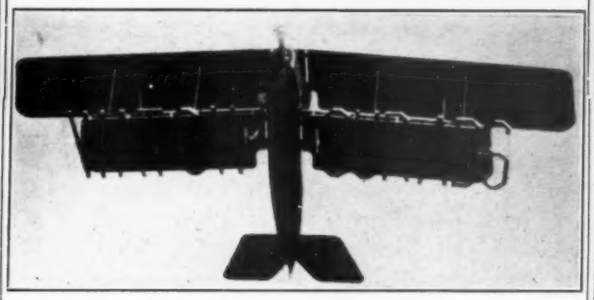

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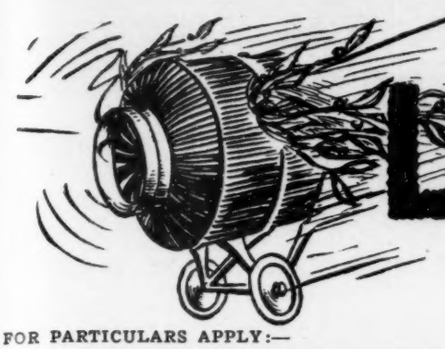

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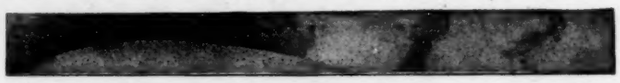

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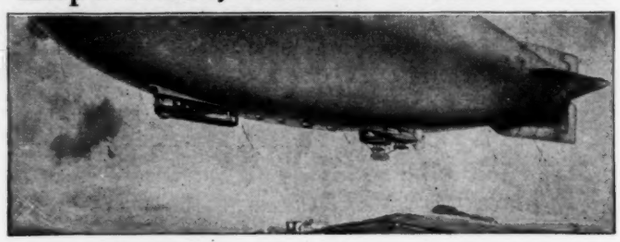

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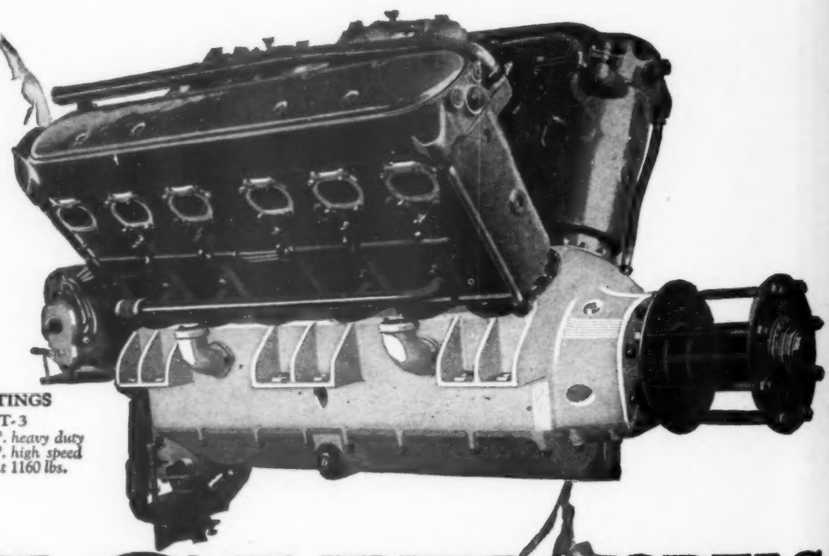

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